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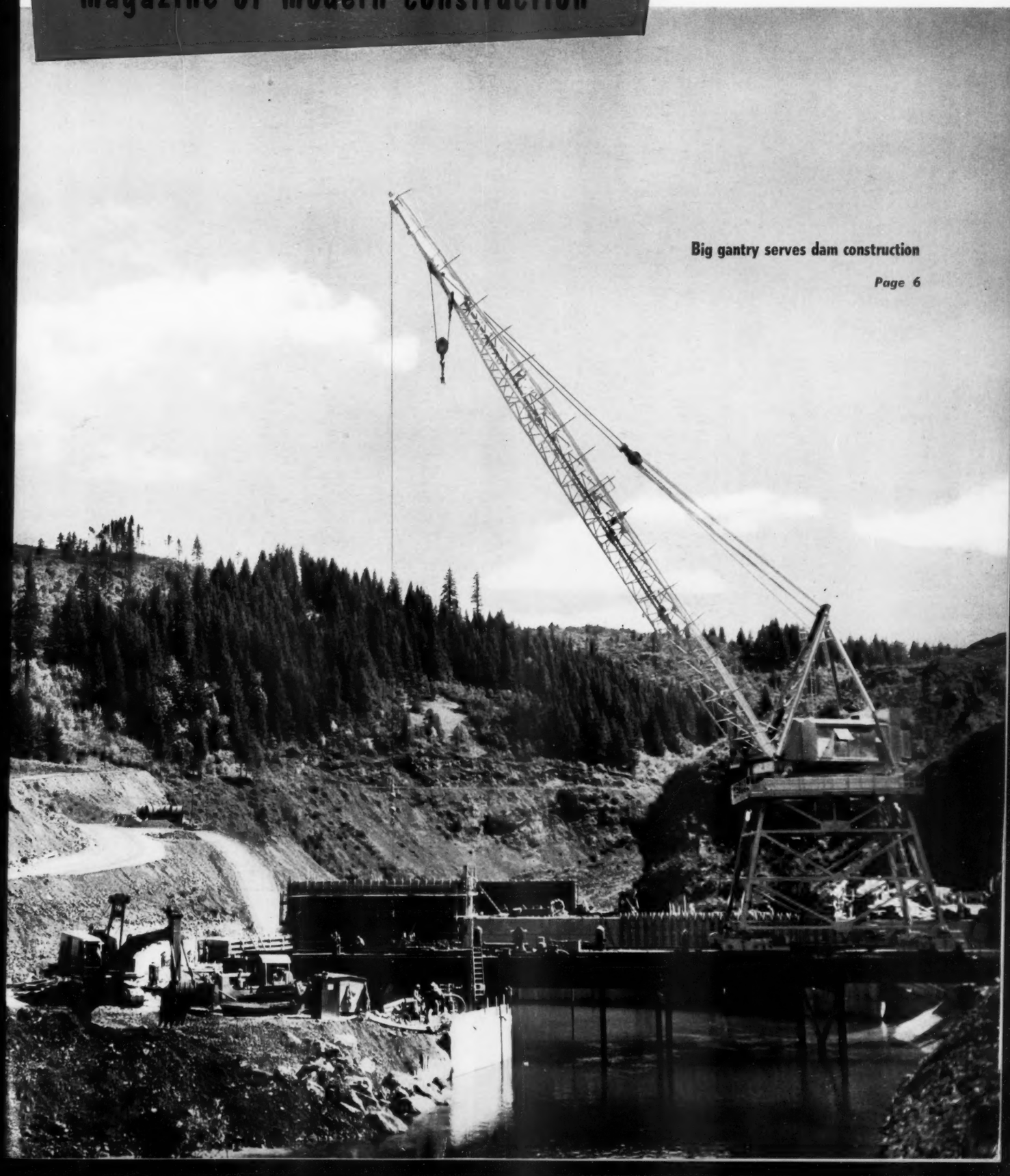
Contractors and Engineers

magazine of modern construction

JULY
1958

A Buttenheim Publication



Big gantry serves dam construction

Page 6

A *durable* pavement, because it's *flexible*

Laying one of the four courses of plant-mixed Texaco Sand Asphalt on U.S.-17. Contractors: E. V. Williams and Adams Construction Company.

Spreading a layer of sand-gravel in construction of the subbase.

From the ground up, the pavement on this section of U.S. Route 17 in Virginia is completely flexible in character. This includes the four courses of plant-mixed Texaco Sand Asphalt, forming the base and wearing surface, as well as the sand-gravel subbase.

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Editorial

A Construction Center for the U.S.A.?

Rotterdam is, among other things, well known as the headquarters of the Netherlands Bouwcentrum. This building or construction center was organized right after the war as a private, non-profit institute by a small group of Dutchmen for the purpose of speeding the rebuilding of their country. In the intervening years the center has expanded beyond its original objective and is now recognized

as the leading institute of its kind in Europe, if not in the world. It has become famous as an authority in building research; an encyclopedia of construction knowledge; and a clearing house and dispenser of information on building materials.

Housed in two large connected buildings, the institute has a permanent staff of 210 full-time employees supervised by Director J. van Ettinger. Taking up a large part of the two buildings are some 500 technical exhibitions of materials and constructions. Suppliers and vendors pay a fee for showing their products, and there is a long waiting list of other manufacturers wanting to exhibit. Revenue from these exhibits is one of the major sources of income for the center.

Another important and revenue-producing service performed by the center is research. For instance, a South American firm of architect-engineers, with a contract to design and build a hospital or an opera house, will send a representative to the institute to gather data on the construction of hospitals or opera houses in any part of the world since the war. Such information may be readily available in the files at the center, for its library contains some 9,000 books and it subscribes to over 600 technical publications from thirty different countries. Translations are made by the staff which comprises some of the world's best linguists. If the needed information is not on file, the center will undertake to get it. Research fees vary from a small flat rate for answering a telephone query, to a fee based on the estimated cost of a building where the work is of an involved nature, and when many people are engaged on the project over a long period of time.

The center will not undertake any project which can be handled readily by an engineer or architect, since its purpose is not to compete with private consultants but to work with them cooperatively.

Bouwcentrum also works for the government in computing costs when rising prices introduce escalator clauses into contracts. Unit prices are figured daily to the nearest quarter of a dollar. "The Ministry of Reconstruction accepts these figures," Director van Ettinger explains, "some 4,000 contractors accept them as a fair evaluation, and the institute makes a little money from its calculations."

The aim of Bouwcentrum is simple: to promote the means and materials available for building so that they are used to the best advantage and as efficiently as possible. Director van Ettinger, however, points out that "this task is so extensive and complicated that it cannot be solved by a single human being, a single institute, a single country or even a single continent. Hence, national cooperation at different levels is an essential requirement, but even more, it is necessary to build up a system of efficient international cooperation by linking up national institutes into a worldwide chain."

Director van Ettinger's plea deserves careful consideration by construction technicians throughout the world, including those in the U.S.A. The Bouwcentrum fulfills a function broader in concept than trade shows or associations, and merits study. Maybe it could serve a purpose here with a center in a hub city like Chi-

J. van Ettinger, Director of the Netherlands Bouwcentrum at Rotterdam.

cago, or with centers in the East, Midwest and on the Pacific coast.

The world is faced with an enormous demand for buildings and construction of all kinds. In order to get the most efficient use from the money available for that purpose, we must utilize the utmost in research and transmission of knowledge. Or as Director van Ettinger phrased it—"To invest the minimum in material construction, we must invest the maximum in intellectual contributions". The Rotterdam construction center is fulfilling its objective.

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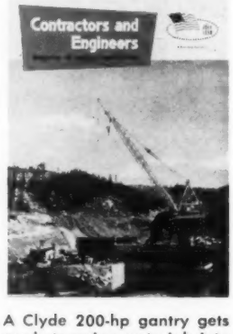

A Clyde 200-hp gantry gets ready to swing materials into place for the North Fork Hydroelectric Development dam on the Clackamas River near Estacada, Ore. It works from a trestle over the diversion channel. At left, a Bucyrus-Erie 38-B backhoe and Cat D8 tractor-dozer work on the road along the channel.
Page 6

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Earthmovers keep highway job ahead of schedule

A fleet of Allis-Chalmers equipment works on Interstate 40 in Oklahoma. Haskins Construction Co., Cordell, Okla., is the contractor for the link of the 4-lane highway which, in 13 years, will stretch from Durham, N. C., to Los Angeles, Calif.

Dry, dusty soil that clogs air cleaners, layers of sandstone and shale that cut tires and make hauling difficult, and temperatures up to 105 degrees F are some of the conditions that Haskins Construction Co., Cordell, Okla., faces during work on Interstate 40 in Oklahoma. But the contractor has completed three of the four contracts for the highway in 65 per cent of the allotted time, and is ahead of schedule on the last one.

The company's fourth contract on the road will be completed late next month. This 4-lane highway will be the Oklahoma link for a highway which, in about 13 years, will run from Durham, N. C., to Los Angeles, Calif.

Final project

On the last project, near the west edge of Clinton, Haskins is using six Allis-Chalmers TS-200 scrapers, three Model 45 motor graders, an HD-16 crawler tractor, two HD-11 crawler tractors, and three HD-21 crawler tractors with push plates and TR-21 rippers. One of the HD-21's is a turbo-charged unit equipped with a 7-roller truck frame and cable bulldozer. This $497,000 contract calls for 1,200,000 yards of dirt to be moved. The two biggest cuts on the job were 55 feet and 65 feet, about 400 feet wide at the top and 1,000 feet long.

During this project and the other three, Haskins used a portable maintenance shop to hold downtime at a minimum. The biggest single repair item was transmissions, which the contractor replaced at about two per year in the motor scrapers. The average annual repair costs on each rig ran about $6,000, including tires. Machines are used three to four years before the company trades them in with 7,000 to 10,000 hours of usage.

Each of the contractor's TS-200 motor scrapers is outfitted with sideboards to add 2 yards to its capacity. The scrapers haul 12 yards per trip for an average of 1,600 yards per day. There are 150 trips per day, on hauls of about 2,000 feet. Rigs work 10 hours per day, six days per week.

First three contracts

Haskins' first contract on the highway began in February, 1957, and was completed in May of the same year. About 504,000 yards of dirt was moved by four Allis-Chalmers HD-15 crawler tractors, four TS-200 motor scrapers, and two Model 45 motor graders on that $142,000 contract near Sayre.

The $327,000 second contract, about four miles west of Clinton, was started in July, 1957, and completed in January. In this 6.7-mile stretch, six TS-200 motor scrapers, two HD-21 crawler tractors with push plates and TR-21 rippers, two HD-15 crawler tractors, an HD-11 crawler tractor, and two Model 45 graders moved 800,000 yards of dirt.

From January to March, Haskins worked the third project, near Elk City. This $217,000 job called for 300,000 yards of earth to be moved. The equipment on this job was the same as that being used for the current contract. THE END

Look for this nearby Goodyear dealer sign for better tire values —better tire care.

GOODYEAR TIRES

COUNTLESS TONS. Its $400,000,000 price tag attests the scope of this job—which runs nearly 1/5 the way around the world! Up to their ears in countless tons of muck, muskeg, rock, shale and dirt, the contractors are coming up with a minimum of 22-foot pavement on 5- to 10-foot shoulders—and only 271 miles of "impassable" gaps still to go! Shown here is an all-mountain sector in British Columbia which previously boasted *no roads at all*. From coast to coast, Trans-Canada's hard-won miles have felt the sure imprint of Goodyear 3-T Nylon Cord off-the-road tires.

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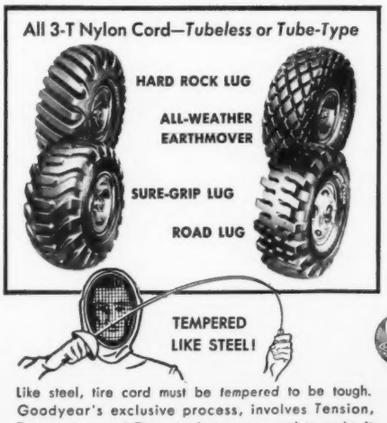

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All-Weather, Road Lug, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

For more facts, use Request Card at page 18 and circle No. 202

Dominating dam construction at the North Fork hydroelectric project on Oregon's Clackamas River is a Clyde 200-hp gantry crane with 140-foot boom. A Bucyrus-Erie 38-B backhoe, right, is digging away the downstream plug.

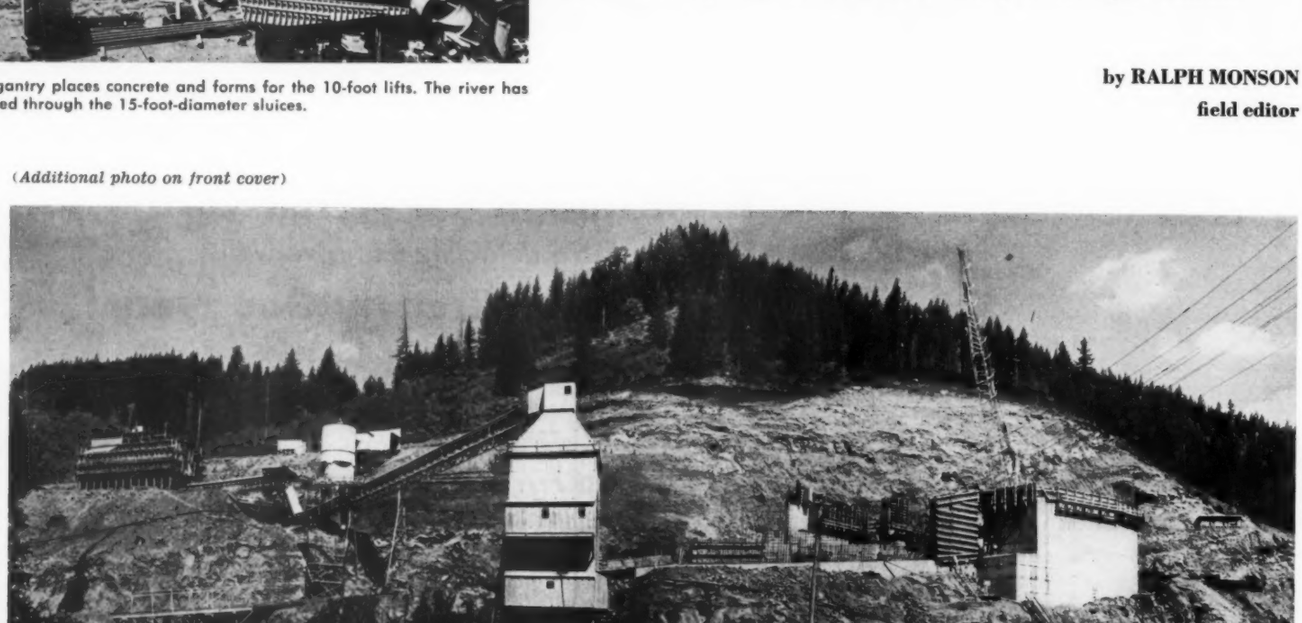
The Clyde gantry places concrete and forms for the 10-foot lifts. The river has been diverted through the 15-foot-diameter sluices.

Contractor races time to finish hydro job

Variable-radius concrete-arch dam spans 675 feet across valley; ultramodern plant eliminates secondary handling of cement

by **RALPH MONSON**
field editor

(Additional photo on front cover)



Concrete is supplied by a Noble plant near the spillway area, right. Cement is delivered to the 2,000-barrel silo near a highway and fed to the plant by a Fuller Airslide. Aggregates in bunkers, upper left, are handled by remote control from the plant.

With three months left before power is on the line, Guy F. Atkinson Co., South San Francisco, Calif., is rushing to complete the North Fork Hydroelectric Development on the Clackamas River near Estacada, Ore.

Atkinson has permitted no time to be wasted on this project. Work kept moving swiftly to get the spillway substantially completed, and the main dam built up to spillway grade, before heavy seasonal rains could cause high flows in the river. This would make it possible for the flows to be diverted over the spillway, if necessary, so that work could continue on other parts of the project. But the contractor took a precaution to make sure that work would continue even if the dam was not brought up above high water elevation. In this case, water was to be handled over the partially completed blocks of the main structure.

The $24 million North Fork Hydroelectric Development being built for the Portland General Electric Co., Portland, also includes a major remodeling of the company's Faraday plant about three miles downstream. Ebasco Services, Inc., New York City, is the engineering firm for PGE.

Atkinson's prime contract covers the entire project, with the structural steel and electrical and mechanical equipment supplied by PGE on direct purchases. PGE awarded separate contracts for the reservoir clearing, highway and water supply pipeline relocation, and similar work.

Concrete-arch dam

North Fork Dam will be a variable-radius concrete-arch structure, rising a maximum of 207 feet above bedrock. The dam spans 675 feet across the steep valley between abutments, and will have a 150-foot-wide gated spillway section built into the river bank north of the north abutment.

The structure has a maximum thickness of 31 feet at the bottom, and tapers to 8 feet at the top. The top lift flares out to provide a 10-foot-wide roadway on the crest. The spillway will be fitted with three 50-foot-wide and 37.5-foot-high tainter gates.

Two 14-foot-diameter penstocks will carry water to the outdoor-type powerhouse, where two Francis 34,500-hp turbines, operating on a net head of 130 feet, will drive two 24,000-kva generators.

Three 15-foot-diameter sluices were built through the blocks at the bottom of the dam to provide for diversion of the river during the construction period. When the dam is completed, the diversion sluices will be permanently closed with concrete.

Early work

Atkinson removed most of the overburden during part of three weeks' work late in 1956, and during the next few months concentrated on rock excavation for the spillway and the relocation of the highway around the site. Rock roads were built to all strategic points during this period so that the mud churned up by rains would not interfere with the work.

During the first phase of work on the dam, the river was crowded

(*Continued on next page*)

The dam begins to take shape in the rock and earth cofferdam before the river is diverted. The Clyde crane is handling a big face form for the structure.

"A plenty tough job so we called on Caterpillar equipment for this one"

South of Camarillo, Calif., J. E. Haddock, Ltd., is relocating and improving 5 miles of U.S. 101. Some 1½ million cu. yd. of rock are being moved, 7,000 cu. yd. on an average day. Three Caterpillar DW21-Athey PR21 rigs help, carrying 18 cu. yd. apiece. The round trip is a mile, including a 12% grade.

"This job is plenty tough," says Neal E. Saul, project superintendent, "so we called on Caterpillar equipment for this one. Caterpillar gives us satisfactory service with a minimum of down time."

Now Athey PR21 Rear Dump Trailers are powered by *new* Cat DW21 (Series D) Tractors. They feature *new* Super-Turbo Engines that provide 320 HP (maximum output) and twice as much torque rise as before! Results: faster cycles, greater production —*for you.*

Other features, as articulated design and non-stop 90° turns in 33½-ft. diameter, let the DW21-PR21 maneuver in crowded, cramped quarters. Three-stage, double-acting hydraulic rams, 60° tilt and straight body interior permit fast, clean dumping. The PR21 is 14 ft. 1 in. long, 9 ft. wide, allowing fast, easy shovel loading. Below are other Athey trailers suited to construction work.

The complete trailer line of Athey is available through your Caterpillar Dealer. Let him demonstrate on *your* job the hauling unit that's best suited to your requirements.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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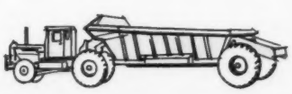
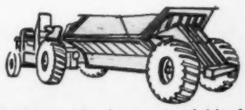


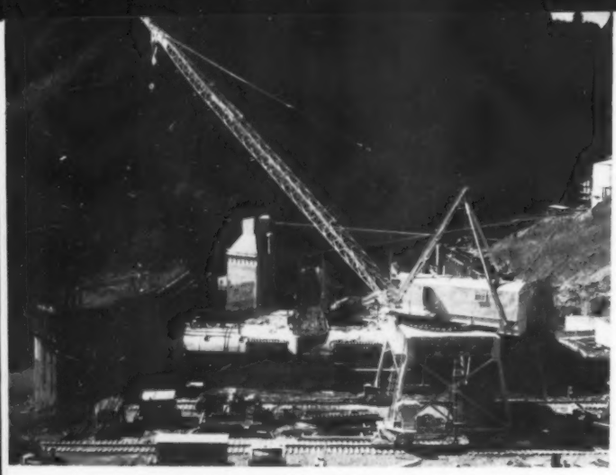
DW20-PW20, 40-ton capacity, speeds to 35.8 MPH. Exclusive 3-door, bottom dump design and high arch axle minimize dumping resistance.

"PR" Series — rear dump. Available for the DW21 (above), DW20 (34-ton cap., 23-second dump), DW15 (22-ton cap., speeds to 37.2 MPH, 13-second dump).



"PD" Series — side dump. Available for the DW20 (30-ton cap.) and DW15 (20-ton cap.). Both have 70° dumping angle and can dump on the run.

For more facts, use Request Card at page 18 and circle No. 203



Reinforcing bars are delivered to workmen on a pier section of the spillway, by the Colby gantry. In the background is the concrete plant.

(*Continued from preceding page*)

against the north bank and confined by a concrete wall and timber crib. A rock and earth cofferdam was constructed around the remaining foundation area, and a bridge was built across the channel to provide access to the work area.

Excavation of the remaining overburden in the vicinity of the arch dam's south abutment was largely a job for Cat D8 tractor-dozers, which pushed the material down the banks to the bottom. A Bucyrus-Erie 38-B shovel loaded the material to Euclid end-dumps hauling to waste areas. The versatile 38-B was changed from shovel to dragline to hoe, to fit excavating conditions as the overburden and rock were dug.

Pressure grouting

Before concrete could be placed, the underlying rock had to be consolidated by pressure grouting. A grout curtain was also placed after concreting was done. The contract included a total of 53,000 linear feet of holes to be drilled and grouted. Continental Drilling Co., Los Angeles, handled all drilling and grouting under a subcontract. The primary curtain holes were drilled along the upstream toe of the dam at 10-foot intervals. Secondary holes at 5-foot centers followed, and additional holes were drilled at 2½-foot spacings where required. Diagonal check holes were drilled and grouted so that there will be no seepage under the completed dam.

The first concrete was placed in the arch dam in mid-1957. To serve this part of the project, a Clyde 200-hp gantry crane with a 140-foot boom was set up beside the dam on a level, filled area. Since this area was to be excavated later to serve as the second-phase diversion channel, a trestle was built to carry the crane. When the trestle was completed, the crane was moved onto it, and the 38-B hoe excavated the second-phase diversion channel.

Cast in 10-foot lifts

Cantilever forms for the 10-foot lifts of each block of the dam were fabricated in a form yard on the job site. Steel truss strongbacks were lined with 2-inch tongue-and-groove lagging for the 50-foot-long form sections. Forms similar to these were first used on Pelton Dam, another PGE project. A big flat-bed truck brought the forms to the dam; the Clyde crane swung them into place.

While this was being done, another crew was building the spillway. Excavation for the spillway and the relocated highway totaled 275,000 cubic yards, most of it rock. Drilling was done by Gardner-Denver Air Trac drills, and a shovel and five Euclid 46-TD's handled most of the material.

A Colby 150-hp gantry crane with 140-foot boom was set up to serve the spillway construction. This crane handled such things as the forms, reinforcing, and concrete for the spillway while the Clyde crane worked on the dam.

Ultramodern concrete plant

All concrete for the dam and spillway, as well as for the work at the Faraday plant, was produced in a Noble plant set up at the dam site. This completely automatic plant had a number of interesting features, one of them being the cement-handling setup.

Cement was delivered by truck transport from the Oregon Portland Cement Co. and transferred to a 2,000-barrel storage silo beside the

"This truck has run over 7500 hours—and we've

highway high up on the side of the valley.

Cement was transferred directly from this silo to the weigh bucket of the concrete plant by a Fuller Airslide. This eliminated the need for any secondary cement-handling equipment in the plant.

Aggregates were produced under a subcontract by Estacada Sand & Gravel Co., and trucked to the site. Like the cement, the four sizes of coarse aggregate and sand were unloaded from the highway, high above the berm where the concrete plant was situated.

Trucks dumped the aggregates directly into a timber bunker at the roadside. The five compartments of the bunker were large enough to hold a complete day's run of materials.

From the time the aggregates were dumped until they were incorporated into the concrete, they were handled by fully automatic equipment controlled from the plant. Air-operated gates with solenoid valve controls discharged each size of aggregate, as desired, to a recovery belt under the bunker. The recovery conveyor carried the material to a rewashing screen where all fines were removed. The sand bypassed this washer.

The wet material was picked up on a 30-inch conveyor belt, 200 feet long, and carried to the aggregate bins at the top of the plant. By using the aggregates wet and using cold water in the mix, it was possible to keep the temperature of the concrete under the maximum permitted by the specifications.

A Gar-Bro 4-yard air-operated bucket places concrete for a base pour in the spillway. Background, the Fuller Airslide slopes down to the left. The conveyor bridge rising to the left carries the 200-foot-long aggregate conveyor.

Aggregates and cement were proportioned from the bins by the fully automatic recording batcher, and discharged into the two Smith 2-yard mixers on the lower platform of the plant. The mixers dumped into a 4-yard collection hopper, and the concrete was picked up by rigs hauling to the pours.

Concrete for all big pours on the main dam and spillway was transported from the plant in Gar-Bro 4-yard buckets. Two buckets were carried on special beds on Euclids. The gantry cranes picked the buckets off the "Eucs", hoisted them to the forms, and made the dump. Big air-operated vibrators consolidated the concrete.

Concrete for some of the smaller pours was transported in transit-mixers, and some of the mix going to the Faraday job was hauled in Dumpcretes.

The concrete for the main dam was designed to attain a strength of 4,000 psi in 91 days. A typical mix contained:

Cement	400 pounds
Sand	864 pounds
¾-inch rock	679 pounds
1½-inch rock	684 pounds
3-inch rock	673 pounds
6-inch rock	675 pounds
Water	196 pounds

Protex air-entraining agent was added to build up about 3½ per cent of air in the mix. A leaner mix with less cement was used for unexposed areas.

Cylinders from all pours were tested at 7, 28, and 91 days, with some intermediate tests at 42 days. With approximately 400 test cylinders under cure most of the time, the laboratory was a busy and important place.

Estacada Sand & Gravel Co., which produced the aggregates for the job, manufactured all of the sizes from plus 1½-inch material. This meant a lot of crushing to make the sand and fine rock. A Marcy rod mill and Wemco sand classifier at the plant turned out the material to meet the rigid specifications.

After placement, the mass concrete was cured with water sprays. Sections which could not be conveniently cured in this manner were coated with Hunt Process Clear. The surface of

OPEN PIT MINING SPECIALISTS, the Isbell firm relies exclusively on Texaco lubricants to keep 17 large dump trucks, 4 shovels, 2 'dozers and 2 rotary drills on the job.

TEXACO LUBRICATION ENGINEER R. H. Trimmer reviews lube problems with Supt. G. L. Laughton who credits Texaco Simplified Lubrication Plan with cutting maintenance costs and keeping big mining job on schedule.

never removed the pan"

"The Texaco Simplified Lubrication Plan keeps maintenance costs down, keeps the job on schedule," reports George L. Laughton, Supt. of Isbell Construction Company's Three Kids Mine project.

Isbell Construction Company is doing strip mining on contract with Manganese, Inc., Henderson, Nevada. They are using a Texaco Simplified Lubrication Plan for this project, and it is piling up some outstanding records.

"As of January 17, the truck shown in the picture had operated 7,714 hours using *Texaco Ursa Heavy Duty SAE 40* exclusively, and it's never had the pan removed," reports Superintendent George L. Laughton. "We also use *Texaco Crater 2X Fluid* for wire rope, *Texaco Gear Lube HD* for transmissions, *Texaco Marfak* and *Texaco Marfak Heavy Duty,* for chassis and wheel bearings. We are entirely satisfied with Texaco lubricants," says Mr. Laughton, "and we have never had a failure due to lubrication."

For *your* equipment, Isbell's outstanding success with Texaco lubricants proves two things: the quality of Texaco lubricants, and the advisability of getting Texaco to work out *your* Simplified Lubrication Plan. Because it is tailored specifically to each job's special needs, a Texaco Simplified Lubrication Plan enables you to handle all major lubrication with very few lubricants – as few as 6 in many cases. That keeps lubricant inventories low, and cuts down your chances of making lubrication mistakes. It also trims your maintenance expense. Above all, your equipment runs smoothly so your jobs can keep on schedule.

Ask a Texaco Lubrication Engineer to help you simplify your lubrication procedure with a Texaco Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 204

each lift was cleaned with an air-water spray before the next lift was placed.

The main dam requires 65,500 cubic yards of concrete, while 23,200 cubic yards will be needed for the spillway structure and paving.

Long fish ladder

Since the Clackamas River is important to the fishing interests, it was necessary to construct facilities for fish to bypass the dam. The result is a fish ladder, 9,700 feet long, and several related structures. The extremely long ladder was designed to bring migrating fish from below Cazadero Dam, about a mile and a half below the new North Fork site, to a point above North Fork.

At the lower end of the ladder there is an upstream migrant structure where a considerable volume of water must be discharged to attract the migrating fish. At the upper end there is another structure to attract fingerlings on their downstream migration and lead them into the ladder for a safe descent.

These structures will accommodate the fish after the project is completed, but during the two-year construction job the fish must be trapped and trucked from the site.

Personnel

Atkinson's forces worked two 8-hour shifts six days a week to place concrete. Forming and the setting of reinforcing steel were done on the day shift, and practically all of the concrete was poured at night. Work continued through the winter on a restricted basis, but went back on the two-shift basis this summer. The project is scheduled for completion in November, and initial operation is scheduled for October 1.

The prime contractor's staff on the project is headed by acting project manager Jack Morton. It includes assistant project manager P. K. "Pat" Mitchell, project engineer Bill Bruguier, carpenter superintendent Gene Ward, concrete superintendent Jack Maxwell, excavation superintendent Alex Morgan, and master mechanic Leo Stewart.

Representing Ebasco Services, Inc. on the project is construction superintendent Roger P. O'Reilly. The resident engineer for Portland General Electric Co. is Larry Kelsh. THE END

Fuller transmission detailed in new film

A 16-mm sound, color film on the Fuller R-1550 Road-Ranger transmission is available from the Fuller Mfg. Co., Kalamazoo, Mich. The film is designed for operators of heavy-duty earthmoving and mining equipment, which have Fuller transmissions.

The film explains in graphic detail how to properly shift the closely spaced gear ratios for maximum performance with diesel engines in the 1,550-cubic-inch class.

In addition to instructing operators on the shifting procedure and the use of a new countershaft brake for quick up-shifts, the film also deals with performance under given operating conditions and the pressurized lubrication system in the 9-speed transmission.

The movie may be shown on request by writing to the firm.

Montana highway dept. opens new state building

The Montana State Highway Commission has opened the Scott Hart Building in Helena. Named in honor of a former state highway engineer, the building contains 46,000 square feet and is adjacent to the highway commission's old building.

The new structure is of curtain-wall construction and houses the entire highway department. The sixth floor is occupied by the Montana division offices of the U. S. Bureau of Public Roads.

Canadian firm starts $60 million project

The Foundation Company of Canada, Ltd., Montreal, Quebec, has started work on a $60 million building project in Montreal. The vast project includes a terminal area around Montreal Central Station, a 42-story office building, a transport center, and another building to house the Canadian National Railways' headquarters.

The job is expected to be completed in about four years.

McKee & Co. opens office in Houston, Texas

The Cleveland, Ohio, engineering and construction firm of Arthur G. McKee & Co. has opened a new sales office in Houston, Texas, to handle petroleum refinery and chemical plant work.

Robert D. Troutman, sales engineer, is in charge of the new office. For the past five years, Troutman was district purchasing agent for the Houston refinery of Sinclair Refining Co., a firm he was with for 16 years.

Big highway letting

Illinois held one of the largest highway construction lettings in its history in May. Bids were received on 105 bridge and road projects in 67 counties. The total value of the projects reached $15,562,000.

FAST... RUGGED HIGHWAY HAULER

CLEMENT BOTTOM-DUMP TANDEM TRAILER

You can put more profit into highway construction jobs when you haul in a Clement Bottom-Dump Tandem Trailer.

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Built to dump-on-the-run, Clement Bottom Dump Trailers, both 15-yard tandem models and 10-yard single axle units, have been carefully streamlined to eliminate dangerous wind whipping of loads during fast highway hauls.

Put more profit in your next highway construction job . . . contact your nearest Clement distributor or write direct, today!

DESIGNED by Clement, oldest manufacturer of frameless end-dump trailers, both cable-lift and hydraulic-lift models.

Limited number of Clement distributors open to qualified heavy equipment dealers in Atlantic Seaboard states.

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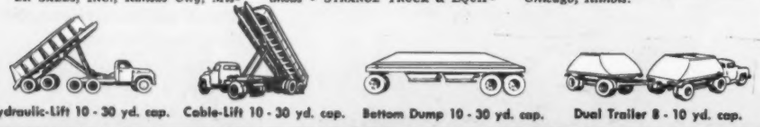
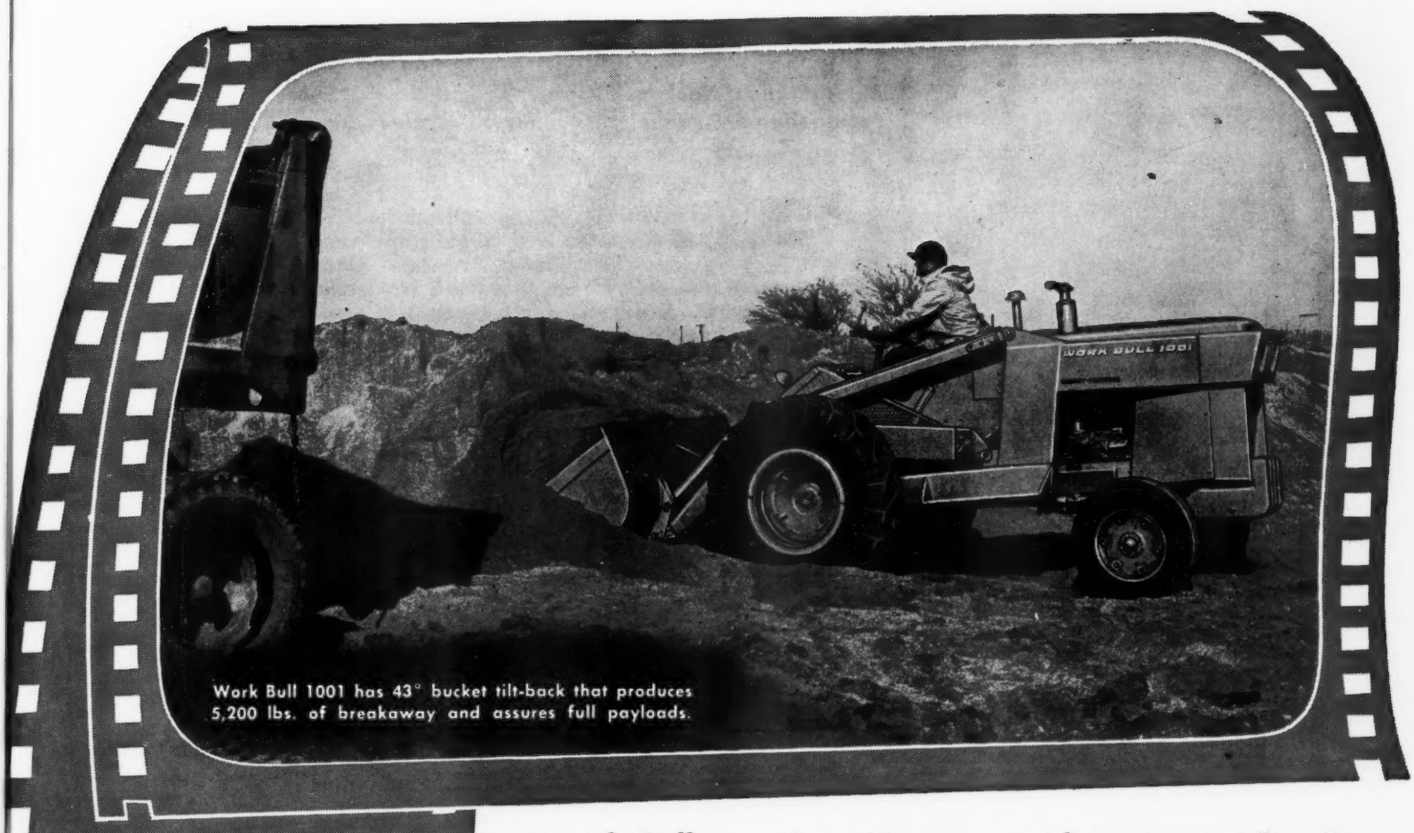


Hydraulic-Lift 10 - 30 yd. cap. Cable-Lift 10 - 30 yd. cap. Bottom Dump 10 - 30 yd. cap. Dual Trailer 8 - 10 yd. cap.

For more facts, use Request Card at page 18 and circle No. 205



Work Bull 1001 has 43° bucket tilt-back that produces 5,200 lbs. of breakaway and assures full payloads.

Stretch Dollars . . . Save Manpower with equipment that does more!

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LET YOU MATCH MACHINE TO JOB, AND STILL GET MULTIPLE DUTY EVERY DAY!

Now, you can choose the power best for your operations, then match it with attachments that are virtually custom-made for industrial use!

Work Bull 1001 Multi-Purpose Tractor-Loader is convertible into 8 different machines . . . from a Loader to a Pick-up Sweeper, Backhoe (with its own backfill blade), Fork Lift, Angle Dozer, Crane, Rotary Broom, and back to a Loader with Scarifier attachments. It has 60.3-h. p. engine and features instant-reversing for fast time-cycle operations.

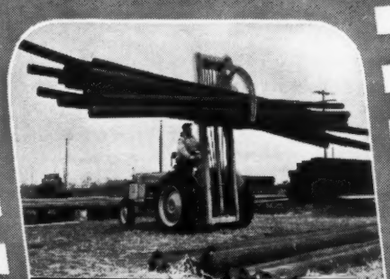
Work Bull 202 Utility Tractor is a husky cost-cutter whose high-torque, 40-h. p. engine produces more power at low speeds than any other tractor in the utility class! Davis Loader-Backhoe attaches directly to the tractor, so the rig performs as one integrated unit. Loader attachments include Fork Lift, Angle Dozer, Crane, Scarifier, and a variety of Loader Buckets. Among its rear end and side attachments are the Auburn Trencher, Scarifier-Scraper, Multi-Purpose Blade, Soil Scoop, Pipe and Cable Layer, Cordwood Saw, Tipping Trailer, Post Hole Digger, and Side-Mounted Mower.

Work Bull 303 Medium-Range Tractor and 500 Loader is the rig you need for tough jobs demanding more power, weight, and reserve stamina. Speed and economy make it suitable for utility use, too. Has instant-reverse, power steering, 54.5-h. p. engine, and a wide range of quick-change attachments.

Work Bull Fork Lift has Materials Bucket, Block Forks, Side Shift, Log Hook, Bale Clamp, standard 48″ Tines, Load Clamp, 20′ Mast Extension, and Angle Dozer. This unsurpassed versatility . . . plus 4,000 pounds capacity, high flotation, power steering, and turning brakes . . . make it the most useful yard handling rig available . . . both, on and off hard surfaces!

Work Bull 202 and Davis Loader-Backhoe are integrated for maximum on-the-job efficiency.

Work Bull 303 with power-matched 500 Loader is a multi-purpose rig for heavier jobs.



Work Bull Fork Lift has ten power-matched attachments for handling all types of material.

For information on the complete Massey-Ferguson Industrial Line ask for Brochure G-4. Write *Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.*

MASSEY-FERGUSON INDUSTRIAL DIVISION

For more facts, use Request Card at page 18 and circle No. 206

Tunnel drilled through mountain

Muddy tunnel floor calls for switch in drill rig, timber decking; remodeling of hydroelectric plant is done in two-month period

An American guy derrick serves the construction area for the Faraday powerhouse addition. A 14-foot-diameter penstock will be constructed in the trench to lead from the forebay dam to the new powerhouse unit.

Drilling a tunnel nearly half a mile through a mountainside was a major part of remodeling the Faraday Hydroelectric Plant, a job done in conjunction with work on the North Fork Dam and Hydroelectric Plant near Estacada, Ore. The new tunnel replaces a section of old wooden flume which clung to the precipitous river bank, carrying water from Cazadero Dam to the plant.

Remodeling of the Faraday plant, included in the contract of Guy F. Atkinson Co., South San Francisco, Calif., is part of a $24 million development by Portland General Electric Co. that will produce 78,000 kw of additional power from the Clackamas River. The project was planned and is being supervised by Ebasco Services, Inc., New York City, engineers for the power company.

The capacity of the Faraday plant will be increased from 19,000 to 44,000 kw by the addition of a new turbine and generator unit. To get the additional water required to operate this unit, it was necessary to build the

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See us for B.F.Goodrich off-the-road tires and service or check Yellow Pages of phone book for more complete listing in your area

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...ntall deliver additional water to remodeled hydroelectric plant

new 23-foot horseshoe-shaped tunnel through the mountain, and to more than double the capacity of the open canal leading from the outlet of the tunnel to the plant forebay. The contract also includes remodeling the forebay dam and building the plant addition.

Drilling tunnel

The excavation and lining of the tunnel were sublet to Northwood, Inc., Vancouver, B. C. Starting at the downstream portal, the contractor excavated the entire 2,440 feet of tunnel while another crew was excavating and building the upstream portal and approach channel. Working three 8-hour shifts per day, six days a week, Northwood crews averaged better than a round per shift for a daily average of more than 20 feet.

To produce each 6-foot round, a pattern of about 100 holes was drilled. The crews started work with a truck-mounted jumbo, but switched to a gantry on rails when the muddy

(*Continued on next page*)

A rail-mounted gantry is used in drilling the face of the 23-foot horseshoe-shaped tunnel. The center portion of the lower platform can be folded up to make room for the rigs carrying muck away.

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NORWALK 2-7171
SPRINGFIELD . . . . . FAirfax 3-9747
TOLEDO . . . . . CHerry 3-1258
WOOSTER—Strock Tire Company . . HOward 2-6906
ZANESVILLE—Goss Supply Co. . . . LAdstone 3-0328

OKLAHOMA

ENID . . . . . ADams 4-5121
MIAMI—Miami Sales Company . . . KImball 2-2888
OKLAHOMA CITY . . . . . FOrest 5-1347
TULSA . . . . . LUther 5-1221
TULSA—Tom P. McDermott, Inc. . . DIamond 3-9188

OREGON

PORTLAND . . . . . BElmont 8-2106
PORTLAND—Mel Goodin Tire Co. . . BElmont 5-4127
SALEM—Russell's Tire Service . . . . EMpire 2-5651

PENNSYLVANIA

ALLENTOWN . . . . . HEmlock 3-3248
BETHLEHEM . . . . . UNiversity 7-4184
ERIE 2-3205

LANCASTER . . . . . EXpress 2-2196
HARRISBURG . . . . . CEdar 4-6296
HAZELTON—Schultz's . . . . . GLadstone 4-2481
JOHNSTOWN—McNally Tire & Rubber . . . 5-4321
PHILADELPHIA . . . . . Pioneer 3-1134
PITTSBURGH . . . . . MUseum 2-8310
POTTSTOWN . . . . . FAculty 3-6410
READING . . . . . FRanklin 4-2274
TURTLE CREEK . . . . . ELectric 1-2077
WILKES-BARRE—Economy Gas & Oil Co. VAlley 3-0169
YORK—L. J. Allen Co. 5728

RHODE ISLAND

PROVIDENCE . . . . . DExter 1-9800

SOUTH CAROLINA

CHARLESTON . . . . . RAymond 2-8391
COLUMBIA . . . . . ALpine 4-8135

SOUTH DAKOTA

SIOUX FALLS 4-9979

TENNESSEE

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CLARKSVILLE . . . . . MIdway 5-5606
DYERSBURG . . . . . ATwater 5-8220
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KNOXVILLE—Tinsley Tire Co. 5-0286
MEMPHIS . . . . . JAckson 5-8477
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HOUSTON . . . . . Capitol 7-0141
LUBBOCK . . . . . POrter 5786
LUFKIN 3-7736
MARSHALL—Manly's . . . . . Webster 5-6776
ODESSA—Odessa Tire & Supply Co. . . FEderal 7-6378
ORANGE . . . . . TUxedo 3-9321
PORT ARTHUR . . . . . YU 3-4567
SAN ANTONIO . . . . . CApitol 7-7278
WICHITA FALLS 322-1122

UTAH

PROVO . . . . . FRanklin 3-6715
SALT LAKE CITY . . . . . EMpire 4-7858

VERMONT

BURLINGTON . . . . . UNiversity 2-3901
RUTLAND—Abel's Tire Corp. . . . . PRospect 3-3700

VIRGINIA

FRONT ROYAL—Board Tire & Battery Co. 277
NEWPORT NEWS 6-1329
NORFOLK . . . . . MAdison 2-3287
PORTSMOUTH . . . . . EXport 7-4673
RICHMOND . . . . . ELgin 5-3286
ROANOKE . . . . . DIamond 4-3241
STAUNTON 5-3210
WINCHESTER . . . . . MOhawk 2-0381

WASHINGTON

SEATTLE . . . . . ELliott 6666
SPOKANE . . . . . MAin 4-5271

WEST VIRGINIA

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HUNTINGTON—Stettler Tire Co. . . . JAckson 3-0197
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MANITOWOC . . . . . MUrray 4-4712
MILWAUKEE . . . . . DIvision 4- 266
MILWAUKEE . . . . . MItchell 5-5640
WAUKESHA . . . . . LIberty 2-6675

WYOMING

CASPER—Wyoming Tire Co. 3-5701

...tires and service

Drillers sink a 100-hole pattern for a 6-foot round at the heading. Copco chisel bits are being used by all 12 drills on the job.

(Continued from preceding page)

tunnel floor gave the truck too much trouble. Twelve Gardner-Denver and Copco drills and jack legs on the jumbo were all equipped with Copco chisel bits. Drilling air was supplied by Gardner-Denver 600 and 900-cfm rotary compressors.

The holes were loaded with Du Pont Gelex 3 with millisecond delays of 1 to 10 in a semiconcentric pattern. This relatively slow powder and the long delays were very effective in producing a neat hole with minimum overbreakage.

After the shot, the big ventilating fan went to work, blowing in a large volume of fresh air through the 30-inch line so that mucking could start as soon as possible.

An Eimco 105 loader mucked the shot rock into Euclid end-dumps that hauled out of the tunnel and over a bridge across the canal to a very restricted disposal area. Four "Eucs" were used in the early stages when the haul was short, and two more were added as the heading advanced. The "Eucs" were able to pass in the tunnel.

At the outset, there was quite a bit of fine material and water on the tunnel floor. As the "Eucs" began working through this, they churned up a soft mud that made the tunnel nearly impassable. The same material gave the truck jumbo a lot of trouble. To eliminate the difficulties, Northwood decked the entire floor of the tunnel with 4×12 timbers supported on the underlying spreaders. This worked well, although some mud still worked up on top of the planks.

After mucking out a round, crew men placed a set of bracing. Arch ribs of 8-inch WF beams, shaped to the contour of the tunnel, were placed at 5-foot intervals. The arches were held in place by 6×12 timber spreaders and tie rods. Timber lagging was placed wherever necessary.

Excavation for the upstream portal was handled by a shovel and four D8 tractors pulling Cat 80 scrapers. This was about the only type of haul unit which could operate in and out of the small, deep excavation.

Since this intake excavation had to be carried down below pool level, a natural earth plug was left in place along the river to serve as cofferdam. When the job is finished, the cofferdam will be breached and water will flow into the tunnel.

Remodeling rushed

The tunnel contract and some of the other work at the Faraday plant are continuing on through most of 1958. But other operations at the plant had to be completed in a two-month period when the plant could be taken out of service.

During these two months, 150,000 cubic yards of excavation was removed to double the width of the canal leading from the flume and tunnel to the power plant. A shovel, scrapers, and Euclids all joined in this operation.

A section was cut out of the old forebay dam at the end of the canal above the power plant, and a gate was constructed. At this gate, a 14-foot-diameter penstock was placed to serve the new turbine. Other work here included the base for the new turbine and generator, as well as the tailrace and other related work.

An American guy derrick was set up to serve the very restricted site of the powerhouse addition. Concrete for this work was trucked from the Noble plant at the North Fork site in transit mixers, Dumpcretes, or Gar-

Caterpillar No. 955 Traxcavator works 10 hr. a day loading sandy loam into 6-yd. trucks for Brookings Excavating Co., Brookings, S. D. Two blocks of a street on the outskirts of town are being widened. Traxcavator is leveling bank. "One of the features we like best about it," says owner Lyle Stewart, "is the 40-degree tilt-back. It's especially useful tearing up old roads and sidewalks. You can get the bucket under a slab and use the tilt-back to tear up larger slabs at a time." This No. 955 is used for backfilling, too, and for digging basements, as well as for finish grading.

NOW AVAILABLE! NEW SIDE DUMP BUCKET!

Directly interchangeable with standard bucket . . . same pins, bolts, nuts. Easy to operate. Dumps to the left as well as forward. 1¾ cu. yd.

WHAT TO LOOK FOR WHEN YOUR CATERPILLAR DEALER DEMONSTRATES A No. 955 TRAXCAVATOR ON YOUR JOB

1 Notice the *triple-grouser* track shoes, designed specifically for this machine.

2 See the *5-roller track frame and larger idlers*, for better stability.

3 Check the *spool-type valves*, for smooth, positive bucket control.

4 Try the *padded seat made of foam rubber and raised* for good visibility.

5 Learn how convenient the *one-hand lift and bucket control levers* are.

6 Start the *all-weather gasoline starting engine* – so easy from the operator's seat.

7 Examine the *lift and bucket control arm linkage* – permits *40° tilt-back* at ground level.

8 Get the whole quality story behind the *CAT 70 HP Diesel Engine*.

9 Hear the amazing economy and convenience facts behind the *exclusive oil clutch*.

10 Watch the big 1½-*cu.-yd. bucket* in action (it's the widest part of the machine).

And this is *only the beginning* of your demonstration. Call your Caterpillar Dealer today.

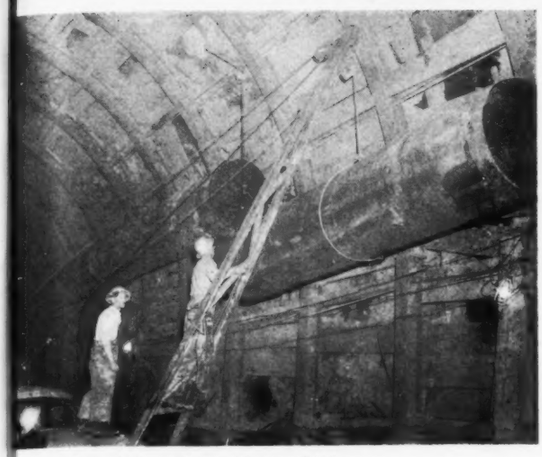
Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

HARD-WORKING, LONG-LASTING LOADER VERSATILITY

For more facts, use Request Card at page 18 and circle No. 208



A section of the 30-inch pipe is added to the ventilating line inside the tunnel. The pipe is being raised into position by a front-mounted boom and winch on a Dodge Power-Wagon.

"Your kiss, dear!... Wow!"

Bro 2-yard buckets carried on trucks. A light bridge across the river at the powerhouse site restricted the use of the larger buckets and Euclids used at the North Fork project. The concrete had to be hauled several miles over a winding mountain road with moderately heavy traffic and, since it was considered too dangerous to haul the concrete at night, all pours on the Faraday job were made in the daytime.

In spite of the restricted working conditions, short working schedule, and numerous other complications, Atkinson carried the work at Faraday along on schedule. The units of the original plant were returned to service at the end of the two-month period. The tunnel and the new plant addition will be completed and ready for service by October, as planned.

Personnel

The men responsible for planning and carrying out this carefully scheduled job were project manager Hugh Parker of Guy F. Atkinson Co. and construction superintendent Roger P. O'Reilly of Ebasco Services, Inc. The tunneling work of Northwood, Inc., was supervised by general manager George Foster. Larry Kelsh served as resident engineer for Portland General Electric Co. THE END

Steel highway bridges detailed in AISC booklet

A two-color, profusely illustrated brochure, "Highway Bridges of Steel", is available free of charge from the American Institute of Steel Construction, Inc., 101 Park Ave., New York 17, N. Y.

The booklet is divided into two sections. The first discusses the economy of steel, aesthetics, welding, high-strength bolting, structural low-alloy steels, erection, steel decking, and composite design. The second part contains examples of typical details showing solutions to some of the more troublesome problems in steel-bridge design.

The chief aim of the booklet is to offer suggestions for simple and economical planning of the bridges that will be needed for first-class roads scheduled to be built for the interstate highway program.

For more facts, circle No. 209→

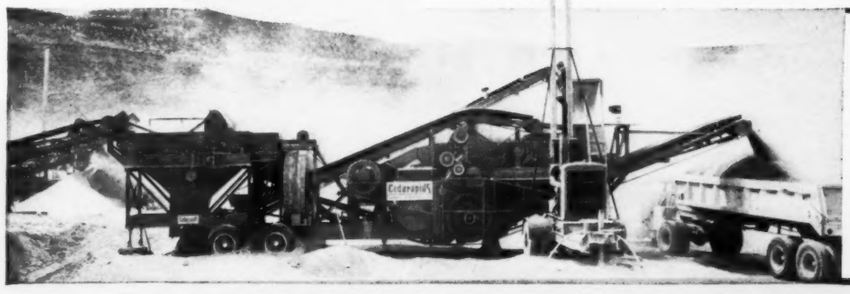
New Pre-Screening Attachment gives Cedarapids Commander GREATER VERSATILITY... HIGHER CAPACITY

358N

Now your Cedarapids Commander—the next one you buy or the one you have on the job—can be equipped to remove fines from the circulating load and give you additional flexibility in meeting specifications calling for high percentages of crush while maintaining the plant's normal high capacity.

The secret is the new Cedarapids Pre-Screening Attachment. It's the most efficient accessory available to make the operation of a single portable tandem plant not only economically practical, *but profitable*, where the finished product must be up to 100% crushed, or in low grade material where fines are excessive.

It will pay you to get complete information about the competitive advantages this new attachment will give you for a comparatively small investment. Your Cedarapids dealer has all the details. See him today, or write to Iowa Manufacturing Company for information.

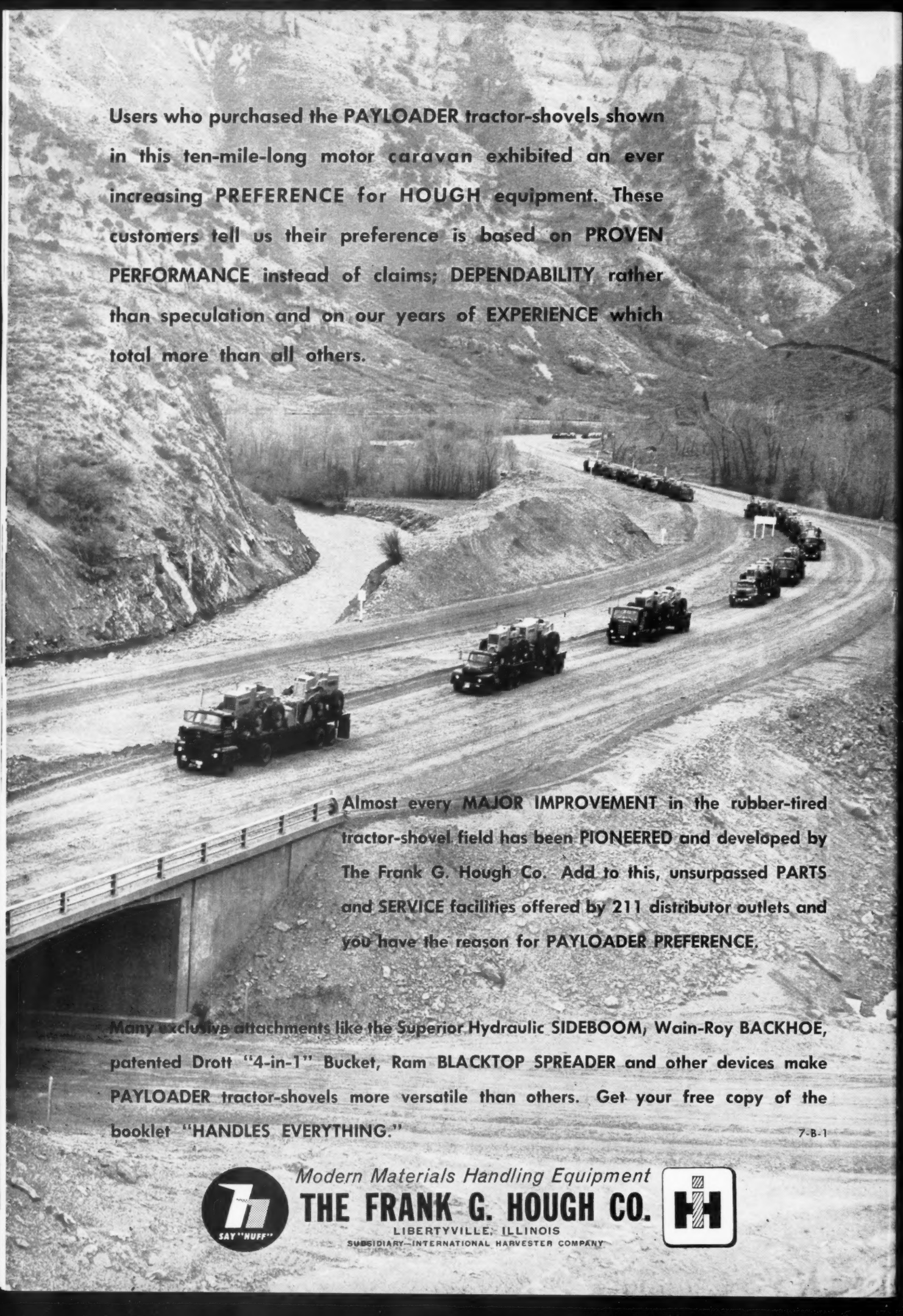


This Cedarapids Commander Crushing and Screening Plant, equipped with Pre-Screening Attachment, produced ¾" specification aggregate from a pit with high percentages of fines at a 170 ton per hour clip. The plant is owned by Pioneer Construction Company of Pueblo, Colorado.

Apply these Pre-Screening Advantages to Your Operations

- Removes or by-passes excessive fines or dirt.
- Meets specifications calling for 100% crushed aggregate with three product sizes.
- Permits production of high type specifications from poor, contaminated pits.
- Increases plant capacity and cuts crusher maintenance by reducing the circulating load.
- Adds 80% more screening area to portable Commander and Junior Tandem plants.
- Handles high volumes of sand, or by-passes acceptable fines around plant for further processing.
- Combined with plant, will produce 5 sizes of finished product.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.



Users who purchased the PAYLOADER tractor-shovels shown in this ten-mile-long motor caravan exhibited an ever increasing PREFERENCE for HOUGH equipment. These customers tell us their preference is based on PROVEN PERFORMANCE instead of claims; DEPENDABILITY rather than speculation and on our years of EXPERIENCE which total more than all others.

Almost every MAJOR IMPROVEMENT in the rubber-tired tractor-shovel field has been PIONEERED and developed by The Frank G. Hough Co. Add to this, unsurpassed PARTS and SERVICE facilities offered by 211 distributor outlets and you have the reason for PAYLOADER PREFERENCE.

Many exclusive attachments like the Superior Hydraulic SIDEBOOM, Wain-Roy BACKHOE, patented Drott "4-in-1" Bucket, Ram BLACKTOP SPREADER and other devices make PAYLOADER tractor-shovels more versatile than others. Get your free copy of the booklet "HANDLES EVERYTHING."

7-B-1

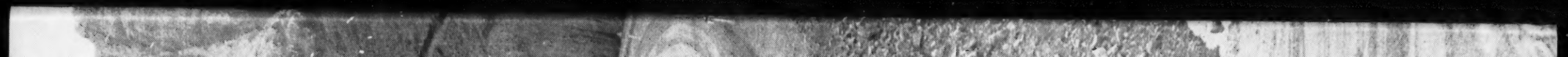
SAY "HUFF"

Modern Materials Handling Equipment

THE FRANK G. HOUGH CO.

LIBERTYVILLE, ILLINOIS

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



The new seven-story office building erected by Allis-Chalmers Mfg. Co. directly across the street from the main office contains offices for three divisions and Allis-Chalmers International.

Allis-Chalmers opens new office building

A new seven-story building, directly across from the main office, is now occupied by Allis-Chalmers Mfg. Co., Milwaukee. A 130-foot enclosed bridge spans the street to connect the building with the main office. The tractor office building to the north is joined on the first floor level with the new building.

The 110,000-square-foot floor space provides offices for more than 800 employees in the comptroller's, public relations, industrial and community relations divisions, and Allis-Chalmers International.

General Tire dedicates new tire retread plant

The General Tire & Rubber Co., Akron, Ohio, recently dedicated its new 85,000-square-foot giant-tire retread plant in East Rutherford, N. J. Occupying 65,000 square feet of the plant are storage and central distribution facilities for all sizes of General tires. The remaining 20,000 square feet is devoted to the Kraft process of recapping tires, including giant off-the-road tires used in road-construction work.

The firm has appointed Robert B. Wilbur Southeastern division manager for manufacturer's sales. From headquarters at Atlanta, Ga., he heads sales operations for a six-state area.

Two partners become sole owners of Safe-T-Flare

W. E. Moon and Alfred B. Dye, former part owners of the Safe-T-Flare Corp., North Kansas City, Mo., have purchased the entire interests of the other two owners, H. E. Custer and I. Newton Wolfe. Moon and Dye are now the sole owners of the firm, which manufactures, sells, and rents flashing light warning barricades.

The company will continue to operate as in the past, but on an expanded basis.

◄ For additional information on The Frank G. Hough Co. advertisement, use Request Card at page 18 and circle No. 210.

For more facts on Dorsey Trailers, use coupon, or Request Card at page 18 and circle No. 211 ►

TIME AND MONEY SAVERS...BY Dorsey

Removable Gooseneck
Model RG
15 to 35 ton capacities

Dorsey's patented hydraulic system makes one-man operation a practical reality, which means a driver can load and deliver self-propelled equipment without assistance.

A self-contained hydraulic power unit is now standard on the RG, which means it can be pulled by any tractor.

20" tires and full spring tandems are also standard, making RG ideal for highway operations as well as on rough terrain.

Deck can be raised or lowered while loaded and in transit to pass over or under obstructions.

New Dorsey
HYDRAULIC DUMP TRAILER

Frameless design adds thousands of pounds of payload capacity to the Dorsey Dump Trailer, and it's ruggedly built to stand up under the extra tonnage it can haul.

Heavy-duty telescopic hoist is placed at the extreme front to utilize the tilt principle instead of lift, reducing strain and wear on hoist and hydraulic system.

High-strength steel arms stabilize the unit when dumping. During last degrees of lift, tandem front wheels are raised and weight rests solidly on rear axle with springs out of action.

For the full details on any of Dorsey's complete line of heavy-duty trailers, call your Dorsey Low Bed Distributor or mail the coupon.

DORSEY

DORSEY TRAILERS
ELBA, ALABAMA

Dorsey Trailers
Elba, Alabama

Please send information on:

☐ Removable Goosneck ☐ Dump Trailer
☐ Low Bed Trailer ☐ Platform
☐ Self-Loading Float ☐ Tilt-to-Load

NAME: .....
COMPANY .....
ADDRESS: .....
CITY AND STATE: .....C&E

Gravel firm believes in community service

In gravel pit No. 5, which in 15 years will become the site of an industrial development, a Bucyrus-Monighan 2W with Hendrix 2½-yard bucket loads material into a LeTourneau-Westinghouse 18-ton rear-dump. Another LeTourneau-Westinghouse 21-ton rear-dump waits to be filled.

A forward-looking company founded back in the days of horse-drawn wagons has grown with the years to become the largest aggregate producer in the Grand Rapids, Mich., area. The Grand Rapids Gravel Co. has four screening plants that produce 1¼ million tons of gravel per year. Four batch plants, which put out 190,000 cubic yards of concrete annually, keep 35 transit-mix trucks hustling about the city.

Modernizing equipment and adopting new ideas to fit the changing times are the main reasons for the growth of Grand Rapids Gravel Co. One new idea which has been helpful to the company as well as the community is its program of developing and improving land in and around its abandoned gravel pits.

Because the pits are worked with future land use in mind, a water-filled hole may become a lake in an exclusive subdivision, or a dry pit may become the site of an industrial plant. The profit from the venture is realized not so much in the increased value of the land as in better relations with the public.

For the Grand Rapids Gravel Co., public relations are particularly important. Its pits are located in a residential area, on the outskirts of the city, which contains some of the best natural gravel deposits in the state. Faced with the problem of buying up land to open new pits, the company has, in the past, encountered considerable resistance from property owners. The owners feared that the pit operation would leave their neighborhood with an unsightly, hazardous hole that would depreciate adjoining land. In recent years, this resistance has been overcome by presenting property owners with a positive plan for improving land in the abandoned pit and surrounding areas after work is completed.

Lake-type development

An area now being worked by the company will, in several years, become an attractive lakeside subdivision. The lake, formed by the high water table in the pit, will be a half mile long and about 600 feet wide. The sides of the pit are cut down on gentle slopes to provide beaches on the lake. Any waste material in the pit operation is used to fill in low spots in the adjoining land.

About 40 homesites will be included

TOMORROWS BULLDOZER—TODAY!

"THE BULLDOZER OF THE FUTURE" this is the way one Road Dept. official described the Eimco 105 when he saw it operate on competitive tractor tests. Here, once again, the Eimco 105 Dozer has demonstrated superiority over conventional type tractors. In job after job, the 105 consistently proves that its simplicity of operation, smooth power flow, visibility, maneuverability and reduction in operator fatigue is the difference between marginal production and profitable production.

The work site consisted of a steep incline with rock outcropping in big slabs. The bottom ends of the rocks were deeply embedded and required maximum tractor effort to remove them.

Bulldozing down the slopes, the torque converter drive of the 105 enabled it to pick up a capacity load and move down the slope ahead of the competitive tractors with their outmoded conventional type drives.

Throughout the test — straight bulldozing, removing rocks and maneuvering — the 105 managed everything that came its way and did it with the least amount of operator effort. In direct contrast, the competitive tractor operators were constantly clutching, changing gears and braking to accomplish their tasks.

Eimco's Unidrive constant mesh transmission gives variable speed independent track control without clutching and shifting. Let us demonstrate this tractor.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

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EIMCO

B 330

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New York, N. Y.

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Program of developing, improving land in and around gravel pits spells success for Grand Rapids Gravel Co.

At one of Grand Rapids Gravel Co.'s four screening plants, a Simplicity 3-deck screen produces three sizes of gravel and two grades of sand. The Bay City 45 crane, left, moves a load of material from the stockpile to the Butler overhead loading bin. The Trojan Loadster and the Buckeye 70 crane, right, also aid in stockpile handling.

in the subdivision. The water frontage of the lots will be increased by dredging U-shaped channels from the lake. The 30-foot-wide×8-foot-deep channels will make islands, each containing six or seven homesites. One side of the island will border the lake and the other three sides will border the channel. A bridge will cross the channel to connect with the one street on the island, which ends in a turnaround for vehicles.

From pits to parks

Perhaps from the standpoint of public good will, the gravel pits which have become park areas have been most satisfactory. The popular Lamar Park in Grand Rapids, formerly the site of one of the company's pit operations, is now a recreational area with a lake for swimming in the summer and skating in the winter. Several industrial plants have already been built on pit sites suitable for this type of development.

To inform property owners about the company's land development program, Donald I. Battjes, executive vice president and secretary, has published an attractive pamphlet describing the program. The pamphlet explains the benefits a community receives from aggregate production and illustrates the present land improvements on former company pits.

Pit operation

Although land development has its place in company policy, by far the biggest job is knocking out the 1¼ million tons of aggregate per year. With this part of the operation, the president and grandson of one of the founders, Clyde D. Battjes, is particularly concerned. Keeping four screening plants operating efficiently requires considerable experience and ability.

The largest of the four plants is located in a ½×¾-mile site on Prairie Street in the southwest part of Grand Rapids. The pit, opened in 1946, will in another 15 years become the site of an industrial development. Basically, the plant washes, grades, and crushes the material from the pit to produce about 250 tons per hour. Unlike other large aggregate producers in the state, the company has not found it necessary to use heavy media separation in the plant. Because of the high quality of the gravel deposit, there is no need to

(*Continued on next page*)

How Dodge saves you money by matching your truck to your needs

Dodge medium- and heavy-duty trucks have always been built from a wide range of "Job-Rated" components to match a truck exactly to your job. This means that you aren't forced to pay for capacity you don't need, and you don't get undersized units that shorten your truck's life. Just look at the range of components today's line of *Power Giants* offers:

In power, there are Sixes from 125 to 141 hp., Power-Dome V-8's from 204 to 234 hp. Exclusive Power-Dome V-8 design reduces harmful carbon deposits, greatly reducing the need for engine overhauls to maintain maximum power.

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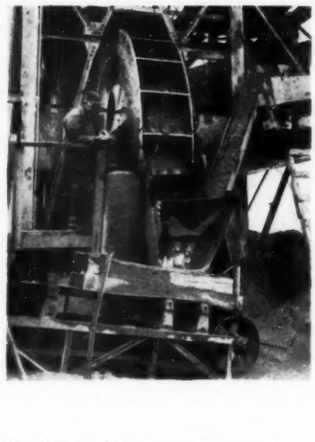
In economy, Dodge provides the thriftiest and most efficient engine and transmission combinations. A range of eight engines and eight transmissions, including automatic Torqmatic, makes this possible. You save on gasoline, too, because Dodge engines operate efficiently on regular gasoline!

Priced competitively throughout the line, in many models Dodge is priced *lowest!* No matter what Dodge *Power Giant* your job calls for, you'll be agreeably surprised at its thrifty price tag. See your Dodge dealer soon, and get his special 40th-Anniversary deal!

DODGE *Power Giants*

For more facts, use Request Card at page 18 and circle No. 213

◄ Minus 1½-inch material rides a belt from the Simplicity 2-deck vibrating screen to the final screening and washing process. Material over 1½ inches, carried by the short horizontal conveyor, drops over a recovery tunnel and is then belted to crushers.



At the base of the screening plant, a Simplicity dewatering wheel removes excess water from the coarse sand. Fine sand from a dewatering scoop, top right, slides down a chute and blends with the coarse sand on the belt, foreground. ►

(*Continued from preceding page*)

reject the lighter weight rock found in the area.

The pit contains rock up to 4 inches in size, but the greater part of it runs from sand to 2-inch material. Working the pit are two Bucyrus-Monighan 2W's with Hendrix 2½-yard buckets. The Monighans load into two LeTourneau-Westinghouse end-dumps, which make a short haul with the pit material and unload over a grizzly set up nearby.

From the collection hopper, the material is carried on a 30-inch conveyor belt to a surge pile and drops onto a belt in a recovery tunnel. From here the material is carried by an inclined conveyor to a Simplicity double-deck screen which divides it into plus 1½-inch and minus 1½-inch material. The oversize rock goes to Nordberg crushers; the material under 1½ inches is carried by an inclined conveyor belt to a rotating drum scrubber. From this water cleaning process, the material passes onto a Simplicity 3-deck 6×14 screen. Spraybars wash the gravel.

The screen, which has a split bottom deck, produces 1½-inch, 1-inch, and ⅜-inch gravel, as well as two grades of sand. The sand, after being dewatered, is carried by short conveyor belts to stockpiles. The gravel drops through chutes to stockpiles below the screen.

The plus 1½-inch material, separated at the first screening process, is conveyed to a Nordberg 4-foot standard crusher. After this cone-type crusher breaks the material down to minus 1½-inch size, it is belt-conveyed to a Simplicity 3-deck vibrating screen. After washing and grading, the material over ⅝ inch is carried to a secondary crusher—a Nordberg 3-foot short head unit which feeds rock back to the original screen. Although the sizes of the screens are changed to produce different types of gravel, the two main products are minus ⅝-inch and minus ⅜-inch gravel.

Stockpile handling

To work the 150,000 tons of stockpile gravel normally kept on hand at the plant, the company uses three crawler cranes—a Bay City 45, a Bucyrus-Erie 22-B, and a Buckeye 70. The cranes also fill the Butler loading bins near the stockpiles. A Michigan 175A and a Trojan front-end loader fill dump trucks and, when necessary,

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Literature on Stoody 1030 is available from your Stoody Dealer (check the Yellow Pages of your phone book) or write direct.

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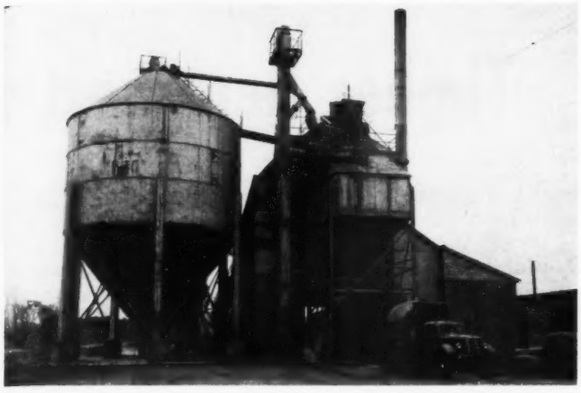

A Mack truck mounting a Smith mixer has just been loaded with ready-mix concrete from the Butler batch plant. Butler aggregate bins provide for 10,000 barrels of storage; cement storage totals 20,000 barrels.

"While you're waiting, we'd like to present a little entertainment."

strip the overburden from the pit area.

About a quarter of the company's total aggregate production is used in its four batch plants; the remainder is sold primarily to road and building contractors. To haul the aggregate, the company has its own fleet of 20 Ford 6-yard dump trucks with Daybrook bodies. These trucks are supplemented by five Mack trucks pulling 30-ton double bottoms.

By maintaining efficient screening and batch plants, the Grand Rapids Gravel Co. makes road and building construction more economical in the Grand Rapids area. And by helping to make playgrounds out of abandoned pits, the firm is making the city it serves a better place in which to live. THE END

Land acquisition is topic of HRB report

Highway Research Board Bulletin 169, "Developing Concepts of Land Acquisition 1957", contains four papers and a report of the Committee on Land Acquisition and Control of Highway Access and Adjacent Areas. This report gives a summary of 1957's highlights in land acquisition, which reflects the effects of the Federal-Aid Highway Act.

The first two papers—economic impact studies on the Dallas Expressway and Washington highways—are concerned with the significant effects that highways have on the value of real property. The third paper, sociological considerations in highway development, brings out the importance of the human element in highway development and use. The concluding paper, on the new land acquisition law of Maryland, gives a verbatim account of the law, which attempts to eliminate land speculation by freezing land values.

Priced at $1.60, the bulletin is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Portland Cement news

The Portland Cement Association, Chicago, Ill., has established a new regional office in Denver, Colo. Edward W. Thorson has been appointed regional manager-district engineer. He will supervise district offices in Salt Lake City, Utah, and Helena, Mont., as well as Denver.

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A section of form and shoring, on a dolly, is ready to be towed away by a Wagner Scoopmobile during work on an Eastshore Freeway bridge in Oakland, Calif.

An American Model 375BT truck crane, using two cables with hooks at each end of a spreader, lifts the form panel off the tower and swings it onto towers already positioned.

Timber bent sectio

Carefully planned and well built wood forms and shores are re-used up to 50 times on elevated highway project

Prefabricated timber bents in modular sections provided economical shoring for the six bridges making up the final link in the Eastshore Freeway through Oakland, Calif.

The six connecting structures and ramps, forming 1.55 miles of elevated divided highway, have four lanes in each direction which carry through traffic over local streets in the congested downtown area.

Construction of this project is being carried on by Johnson, Drake & Piper, Inc., Oakland, under a $5 million contract with the California Division of Highways. It will link the tri-level structure leading to the Oakland-San Francisco Bay Bridge approach and the nearly completed Eastshore Freeway, which extends some 40 miles south along the east side of San Francisco Bay to San Jose.

The topography and the design features of the reinforced-concrete structure made it possible to re-use the forms and shoring as many as 40 to 50 times. This compensated for the relatively high initial cost of the system. The economy of using plastic-impregnated plywood form facings was also demonstrated by the many re-uses.

For a considerable length of this job, the freeway is carried on two parallel bridges spaced 7 feet apart with a median slab spanning between them. The ground under each bridge was generally flat; however, the grade under the northbound bridge is some 16 inches higher than under the southbound structure.

The shoring bents were built to form the higher southbound structure first, but were designed so that they could simply be cut off to shorten them for the lower structure. Since the other smaller bridges in the contract were almost the same height, the shoring was readily adapted for use on them.

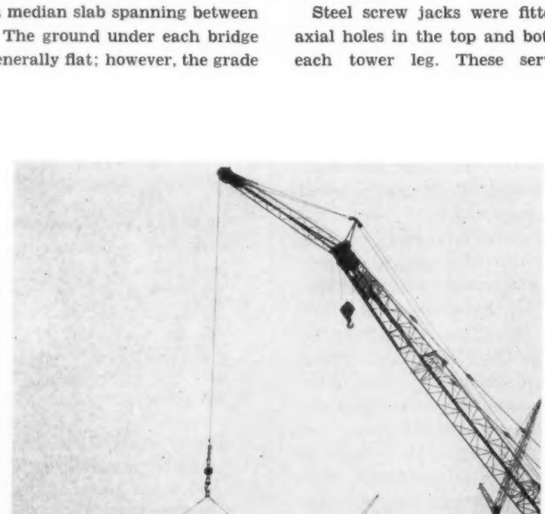
Prefabricated in units

The several sizes of shoring towers were carefully designed in increments which matched the widened portions of the bridges at the enter and exit ramps. This minimized the amount of special shoring required and helped speed placing.

The towers were of three basic types or sizes, all 8 feet wide but ranging from 12.3 to 22.4 feet long. The typical 8×15-foot section consisted of six 6×6 legs braced with 2×10 and 2×12 longitudinal braces and 2×6 cross braces, all securely bolted together with ½-inch bolts. The heavy 2×12 longitudinal brace near the bottom also served as a "handle" which the cranes or other hoisting and carrying machines used in picking up, moving, and placing the towers.

Steel screw jacks were fitted into axial holes in the top and bottom of each tower leg. These served to

The shoring tower, minus the form, is moved ahead and set on timber pads by a P&H motor crane. Four 15-foot lines are dropped inside the tower and hooked to the unit.



Meanwhile, the deck form is placed by the American truck crane. With 80-foot boom and 15-foot jib, it reaches completely across the deck to set the panel. Panels are of plastic-impregnated plywood.

Shore decks of freeway structures

plumb the towers and bring them to grade as well as to adjust the forms to exact grade. Steel plates, through which the jacks operate, were attached to the tops and bottoms of the legs to hold the jacks in place during moving and setting operations.

Attached to the top jacks were 6×6 bolster blocks, 2 feet long, banded with steel straps to 6×12 caps which spanned across the 8-foot width of the towers. Half of the length of the bolster blocks extended out from the towers to receive the 8-foot-long 6×12 beams which spanned between the towers.

Tower parts were all cut and drilled on jigs in the saw yard. While the legs were being drilled to receive the jack rods, the holes were drilled deep enough so they could be used even after the legs were shortened 16 inches for the lower structure. The parts were initially assembled in the field on jigs which held them plumb and square during assembly.

Moving and setting shores

In the sequence of operations, the forms were stripped and moved ahead in units. Stripping was a simple matter of lowering the screw jacks until the form came free. Then a pair of 2-wheel dollies were clamped to the ends of each tower. A Wagner Scoopmobile helped place these dollies and then towed the tower to the area where it was to be reset. The hoist of the Scoopmobile was fitted with a swiveling fork-lift so that it could raise the towers off the ground while the dollies were being attached and removed.

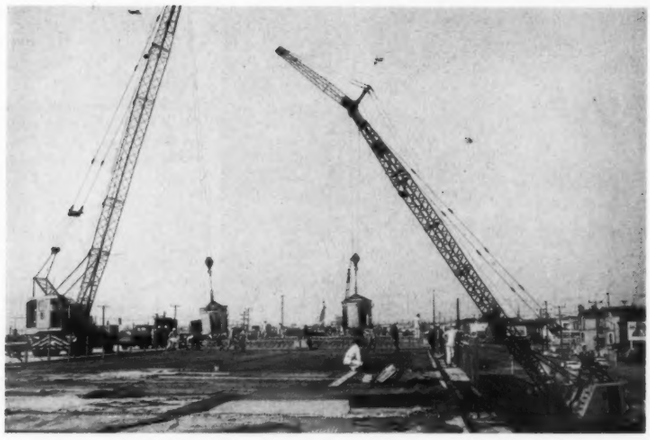
Before the towers were reset, a crew placed timber pads or mud sills on the previously leveled grade. These pads consisted of two 4×12 timbers, 3 feet long, placed side by side on the ground with a single 2-foot-long 4×12 crossways on top. One of these pads was placed for each leg of each of the towers.

A crane then picked up the tower delivered by the Scoopmobile and set it in place on the sills. Four 15-foot-long cables from the crane line were each fitted with a flat hook designed to engage the 2×12 longitudinal brace of the shoring tower. The crane operator dropped the cables down inside the tower, and workmen attached the hooks to the 2×12 ribbons at the corners. When the tower was set in place, the operator simply slacked off on the line and the four clamps disengaged themselves.

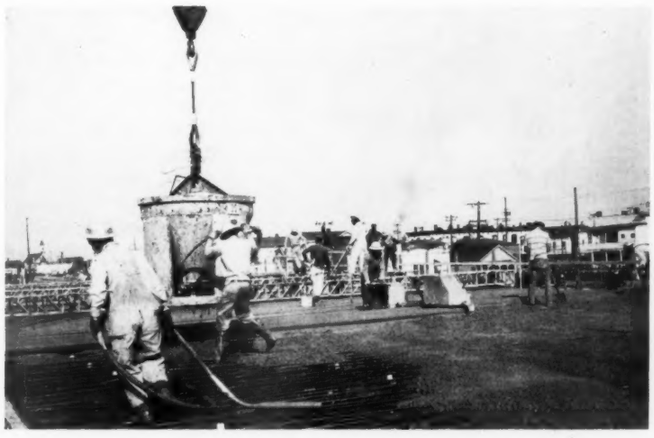
Another way of handling the towers was with a Hyster fork-lift truck. The long tines of the fork truck picked up the towers by the same 2×12 ribbon braces, and carried them wherever the machine could travel.

A series of the shoring towers was set in a row to make up the 54-foot width of the structure. The rows of

(Continued on next page)



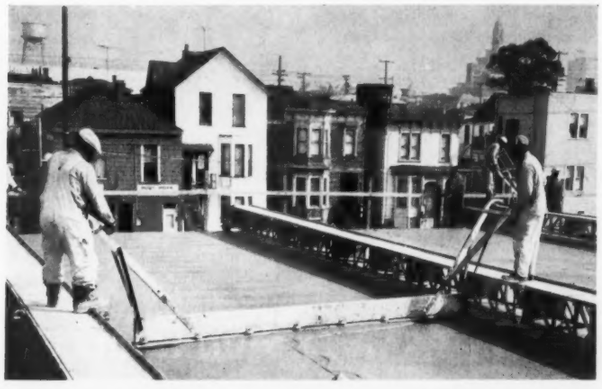
Whenever possible, cranes lifted concrete to the deck. Here, the southbound roadway is used by an American motor crane which buckets concrete to the northbound roadway while a Bay City works from the ground.



A workman dumps the Gar-Bro 1½-yard bucket to the deck while another man shifts the Homelite electric vibrator used to consolidate the concrete. Just behind the dump point are the screeds and the finishing crew.

Clary power screeds, each covering half the width of the deck, finish the concrete. The screeds travel on the outside form on one side and are supported by a pipe screed at the center.

After lower deck and web walls have been formed, placed, and stripped, the lost soffit form is placed for the deck slab. Panels were prefabricated in the form yards. They remain in place after concrete is poured.



The final finish is applied by men working from truss bridges and using a long hand float fitted with handles at both ends. A carpet and a seven-day water cure followed.

Workmen band the 6×6 bolster blocks to the 6×12 caps that span the 8-foot width of the towers. A. J. Gerrard & Co. equipment is used to apply the steel strapping.

A Hyster fork-lift truck is used to move the towers. Towers, background, are set in a row for the 54-foot width of a bridge.

(*Continued from preceding page*)

shoring towers were spaced 8 feet apart. When the 6×12 caps were placed between the towers, they lined up with the caps on the towers to form continuous lines of support for the deck forms. Using 2-inch spud wrenches, workmen quickly adjusted these caps to the required grade.

Special forms and shores were required to form the big 3-foot-wide and 6 to 8-foot 6-inch-deep concrete beams which cap the columns at the bents of the bridges.

Since traffic had to be carried under the structures on intersecting streets during construction, heavy steel beams were used to support the forms at these points.

Use plastic-impregnated plywood

The first step in forming the box girder deck section of the bridges was the placing of the floor system on the shores. Floor panels, made up in the form yard, were 8×22-foot and 8×20-foot sections, plus odd sizes that were needed. The panels were faced with ⅝-inch plastic-impregnated plywood securely nailed to 2×4 joists.

Truck cranes with long booms and jibs set the floor panels very rapidly. An American Model 375BT with 80 feet of boom and a 15-foot jib and a Bay City 30-ton rig with 60-foot boom and 25-foot jib shared the form-setting work. Either rig was able to stand on one side of the structure and place the panels all the way across to the far side.

Helping to speed the setting of the floor panels was a cleverly designed set of lifting hooks. Made of ½-inch rod, the hooks had ends shaped to fit over the 2×6 joists. The long shanks carried coil springs to hold the hooks in place. The other ends of the hooks were bent into loops to receive the cables.

The crane carried a 14-foot-long steel-beam strongback or spreader which hung from the crane hook on two lines. At each end of the spreader were two cables equipped with the special lifting hooks to support the form panels. Each panel had four holes drilled through the plywood at the proper places to receive the hooks.

Workmen very simply and quickly slipped the hooks through the holes in the plywood and over the joist beneath. The crane raised the panel to the deck and set it in exact position. A simple twisting action released the hooks, allowing the crane to go back for another panel without any lost time. A small crew and one of the cranes were able to set the complete floor for a 54×76-foot span in three to four hours.

Side forms for the outsides of the box girders were set next. These were 4-foot-high sections except for long spans over two intersecting streets. In these places, the girder depth was increased to 5.75 and 6.5 feet. These side forms were prefabricated panels of plywood backed with 2×4 studs and wales. Steel braces with turnbuckle adjustments held these forms vertical and braced them from the outside.

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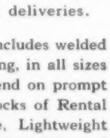

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Outside girder forms are quickly placed once the deck forms are set. Of plastic-impregnated plywood on 2×4 frames, they are supported by angle braces with turnbuckles that are easily set, braced, and plumbed.

Quick-coupling hooks—engaged or disengaged with a twist of the wrist—simplify the work of setting floor panels. Hooks go through holes in the plywood deck panel and around the 2×6 joists. Coil springs hold the hooks in place.

was in place, the reinforcing steel for the lower slab was placed. All reinforcing for the job was furnished and placed by Gilmore-Skoubye, Oakland, which used a Michigan T-24 truck crane to hoist the steel to the deck and to place some of the heavier bars.

Special stem wall forms

The box girders which form the bridge deck consist of 6-inch-thick top and bottom slabs joined by eight longitudinal stem walls. These vary from 8 to 12 inches in width. The girders are continuous over the bents with joints at the third points of every third span. The three-span length was formed and placed as a unit; there are no intermediate construction joints.

To form the stem walls, JD&P designed a clever set of steel elements which were combined with sections of plywood to make up the several sizes and shapes required. The contractor's engineers spent a great deal of time and effort in planning these and the other parts of the forming system in advance of the bidding. After the award, it was necessary only to have a sheet metal shop fabricate the parts so that forms could be made ready for use.

As soon as the stem walls were formed and reinforcing steel placed, runways were built for buggies to deliver the concrete.

Concrete placement

Ready-mix concrete—50,000 cubic yards of it—was supplied by Rhodes & Jamieson, Oakland, and delivered to the site in transit mixers. The contractor used a number of methods of placement, either separately or in combination, to obtain maximum efficiency.

For the bottom slab and stem wall pours of the first structure, much of the concrete was hoisted to the deck by three Wagner Mixermobiles. The transit mixers discharged into the skips of the Mixermobiles, and concrete was passed through the drums to the hoisting towers and raised to hoppers on the deck.

On the deck, Cmetco 10.5-cubic-foot power buggies hauled the concrete from the hoppers to the forms. Six of these power buggies were augmented by hand buggies in a few tight spots.

Whenever it was convenient and economical, the American and Bay City truck cranes were used to bucket concrete directly to the forms in Gar-Bro 1½-yard buckets. After the first structure was completed, one of these cranes frequently worked from the deck of the completed structure, bucketing the concrete to the forms of the parallel bridge.

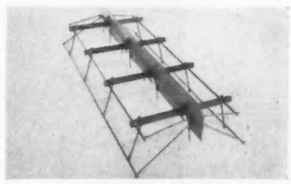
The stem wall forms were stripped the day after the concrete was placed, and the prefabricated lost soffit forms were set in place for the top deck slab the same day. These forms, which could not be recovered, were made up of the cheapest available rough lumber which actually cost as little as $27 per M. The panels were hoisted to the deck by the cranes and quickly placed by the workmen.

(*Continued on page 27*)

Make Better Highway Joints

. . . with Sure-Grip Dowel Basket Assemblies, designed to meet the most rigid requirements of concrete highway construction.

Expansion Joint



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Sure-Grip's manufacturing methods assure maximum strength and accurate alignment of dowels. The dowels stay in place in the concrete. Completely assembled at the plant,* the Dowel Basket Assemblies **nest** for easier, more economical shipping and storage. This permits greater handling ease and prevents welds from breaking.

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*Less expansion core or impression plate.

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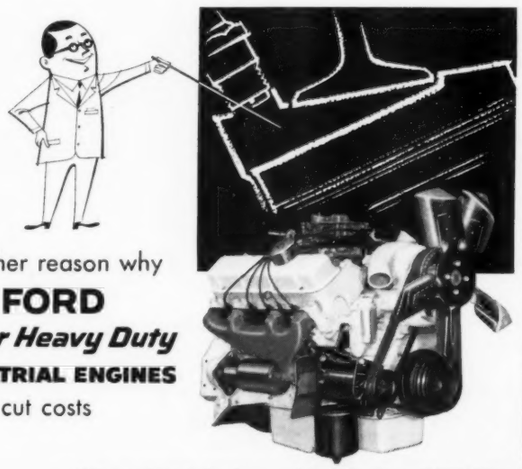

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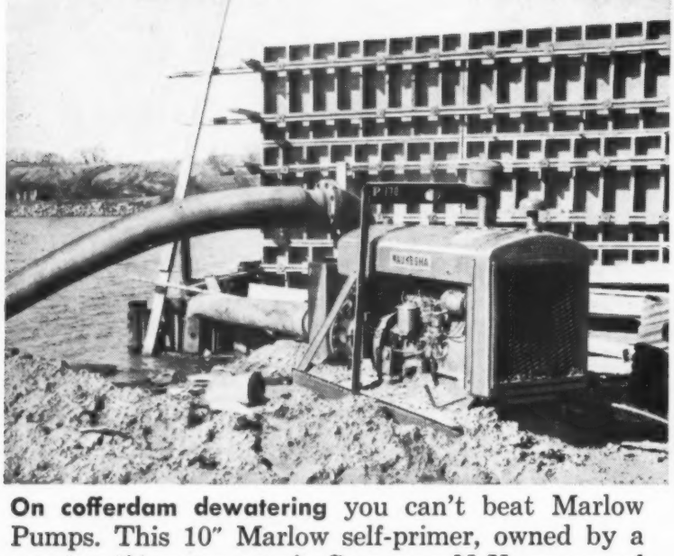
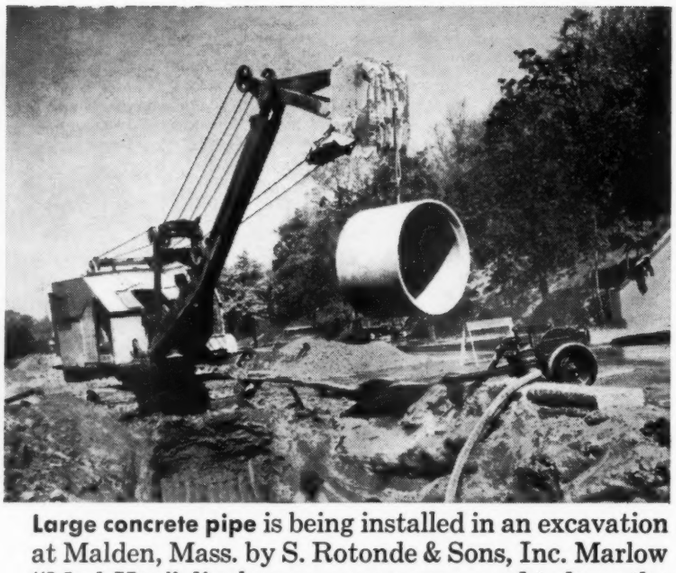
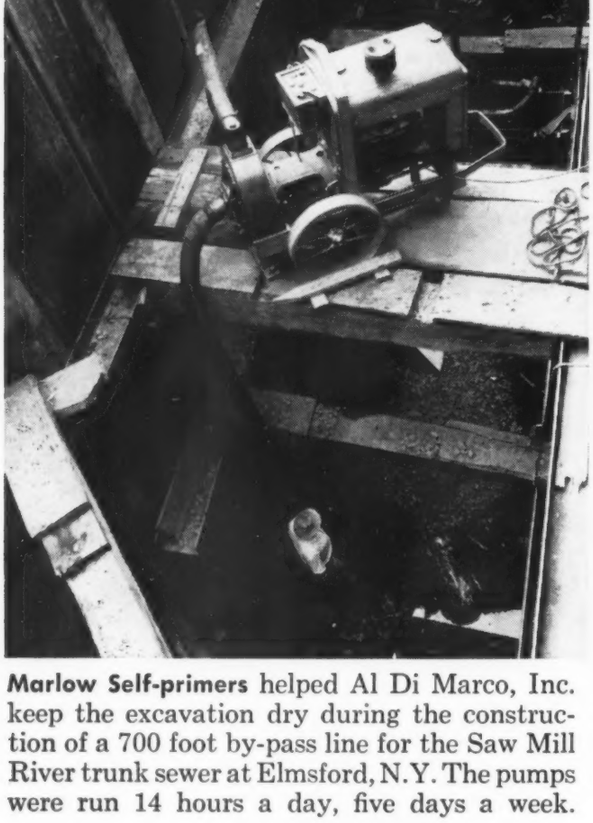


On cofferdam dewatering you can't beat Marlow Pumps. This 10" Marlow self-primer, owned by a construction company in Syracuse, N. Y., was used to dewater a cofferdam on a bridge job at Utica, N. Y.

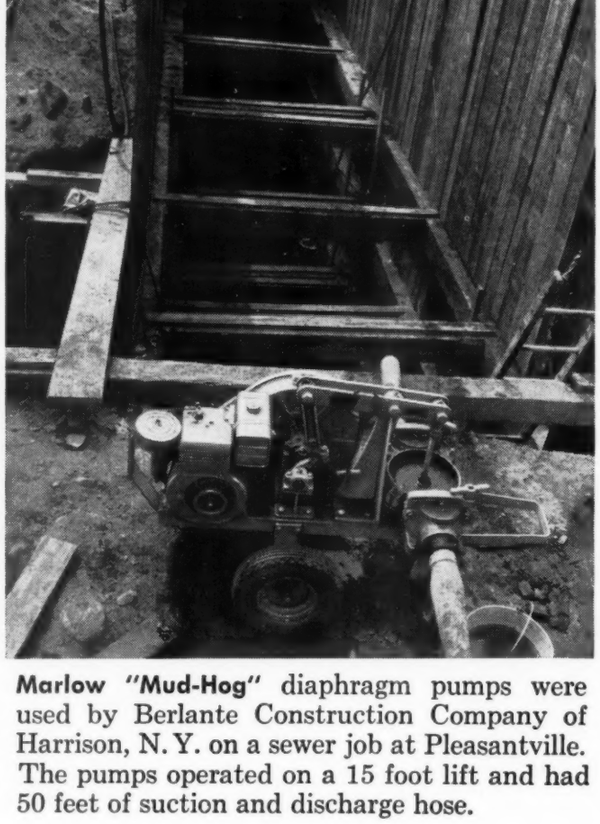


Large concrete pipe is being installed in an excavation at Malden, Mass. by S. Rotonde & Sons, Inc. Marlow "Mud-Hog" diaphragm pumps were used to keep the hole dry and workable.

Construction News Pictures



Marlow Self-primers helped Al Di Marco, Inc. keep the excavation dry during the construction of a 700 foot by-pass line for the Saw Mill River trunk sewer at Elmsford, N.Y. The pumps were run 14 hours a day, five days a week.



Marlow "Mud-Hog" diaphragm pumps were used by Berlante Construction Company of Harrison, N. Y. on a sewer job at Pleasantville. The pumps operated on a 15 foot lift and had 50 feet of suction and discharge hose.

Write today for Bulletin C-04

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As reinforcing steel is placed on the deck, a workman ties the steel with wire carried on a Cal-Tie wire reel.

job required a very careful planning of the sequence of operations. There was necessarily a long delay between the setting and stripping of the shoring and floor forms. First, there was the time required to set the shores, place the floor and stem wall forms, and place the reinforcing steel for these elements.

Then the concrete was placed in these sections. The next day, the stem wall forms were stripped and the lost soffit forms placed for the top slab. After the top slab was poured, the shoring still had to remain in place during the 10-day curing period before being removed and re-used.

To keep the job moving at the desired rate, the contractor built more than 250 shoring towers, enough to shore 20 bays of a bridge at one time. About twice that many floor panels were required.

Personnel

Since this job was located within a few blocks of the contractor's main office in Oakland, it was relatively easy for general superintendent H. A. Sturnay to keep an eye on the job and to assist with some of the problems. The field supervision, however, was in the hands of project manager George Krenkel and his staff, which included superintendents George Warren and Pete Phillips and design engineer Prentiss Jackson.

Representing the Division of Highways of the California Department of Public Works were resident engineer J. E. Burke and assistant resident engineer R. A. Benton. THE END

(*Continued from page 25*)

Concrete for the deck slab was usually placed by the cranes and buckets, one crane working from each side of the bridge. After Homelite electric vibrators helped work the mix down around the reinforcing steel, the concrete was screeded by a pair of Clary power screeds. Each of these, covering half of the width of the deck, rode on the outside form on one side and on a channel iron screed at the center. Workmen on steel truss bridges floated the surface to final finish behind the screeds.

The roadway surface was carpet covered and water cured for seven days.

Footings and columns

Among the first operations at the site were the excavation for footings and construction of the columns. Footing excavations were dug to an average depth of 10 feet by cranes with clamshell buckets and by a Gradall. Very little sheeting was required, and water was encountered in only a few of the holes. The spread footings ranged in size from 9 feet square to 10×20 feet.

Most of the columns were 3×6 feet in cross section and as much as 25 feet high. They were formed with steel and plywood forms tied with steel clamps. The complete forms were assembled on the ground and set in place by one of the cranes.

Concrete was placed by one of the cranes using a Gar-Bro 1½-yard bucket. A long rubber tremie was used to conduct the concrete to the bottom of the form at the beginning of the pour.

The reinforcing rods projected several feet above the concrete of the columns to tie into the cap. Since there was to be a considerable delay between the placing of the concrete in the columns and the construction of the deck, the projecting rods were covered with paper boxes which fitted over the tops of the columns. These protected the steel from exposure to the salt air and the rusting that would have stained the column faces below.

Sequence is important

In addition to the design of the specific form and shore sections, this

"We're buying GMC's because they stay on the job!"

—says S. L. Baird of State Contracting & Stone, Hartford, Ky., in reporting on his GMC stone-quarry haulers.

Roy Schlinkert, GMC District Manager, discusses the purchase of new GMC trucks with State Contracting's Secretary, S. L. Baird, and President Robert Hudson (l. to r.).

"Our GMC's take less time-out for repairs and maintenance than any other trucks we've used," Baird says. That's the dollars-and-cents reason he gives for adding new GMC's year after year—ever since their first eleven in '52.

This GMC brand of dependability is especially important to State Contracting & Stone. "We have a relatively short road-building season in Kentucky," Baird explains. "So our trucks have to go all-out all season long."

Naturally, they have to keep costs in line, too. And according to their books, GMC's again come out in front with maintenance costs about half that of their other-make trucks doing the same job.

Remember, too—the newest GMC's are engineered to outperform even these fine records. Engines are more powerful and time- and moneysaving Allison TORQMATIC Transmissions* are now available.

They're typical of the never-ending improvements you get in GMC trucks—made by the world's largest manufacturer of commercial vehicles exclusively.

**Optional at extra cost*

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Tough pulls like this are no problem to State Contracting's GMC's—even though they already have more than 4 years of rugged stone hauling to their credit. After 300,000 miles of grueling service, they still outperform other trucks on this job.

GMC—America's Ablest Trucks

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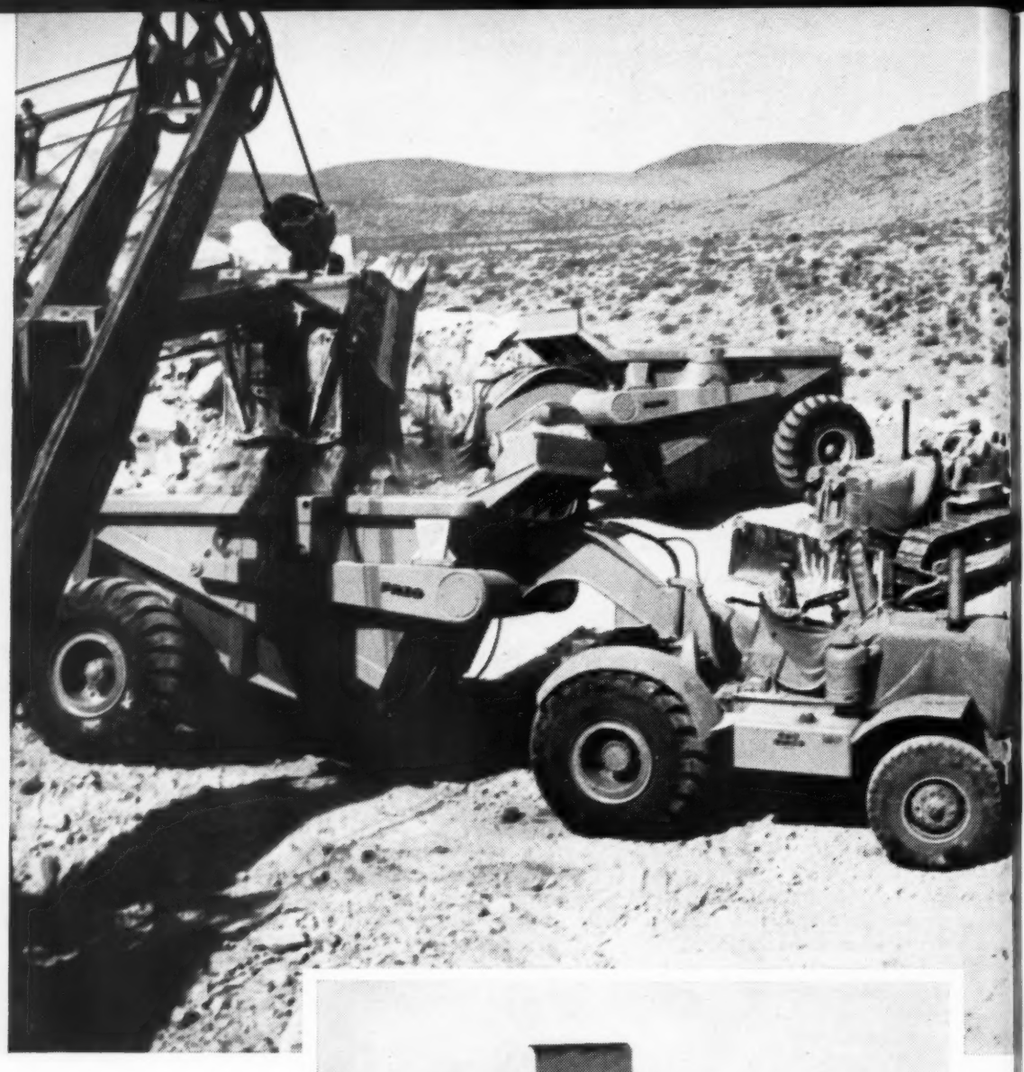
rock is moved faster and cheaper at Guadalupe Pass



PROBLEM: To move 2,700 cu. yd. of limestone and shale per 10 hour shift. Time is vital, and you want to cut your costs.

SOLUTION: Here's how Cecil Ruby Co., Buda, Texas, does it at Guadalupe Pass, on State #180: they moved in Athey PR20-Cat DW20 Haulers! *Two* Athey-Cat rigs out-produce the *four* other units, by hauling 3120 cu. yd. of rock per 8 hour shift. And the savings really start to pile up: the two units moved 900 cu. yd. more rock per shift without overtime, using two less drivers and haulers, on about one-half the fuel consumed by the other four haulers.

Yes, the Athey-Cat units show their heels to competition! They save spotting time under the shovel, with their big target and easy maneuverability. They're faster on the corners and on the straightaways, too, thanks to low center of gravity and top speeds in excess of 35 MPH. Plenty of braking power and wide tread give the operators confidence in the units, despite steep grades.

Speed—maneuverability—capacity—power—loadability—fast dumps—that's what it takes to make time and money on rock! And Athey-Cat units have what it takes! Have your Athey-Caterpillar Dealer show you! Athey Products Corporation, 5631 West 65th Street, Chicago 38, Illinois.

Athey *The Only Complete Tractor-Trailer Line . . . And By the Leaders*

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Bin-type retaining walls prime factor in eliminating two-lane bottleneck

An Armco metal bin wall is erected by Isbell Construction Co., Inc., Reno, so that U. S. 40 near Sparks, Nev., can be widened to four lanes.

A natural bottleneck that narrowed Nevada's U. S. 40 from a 4-lane to a 2-lane highway has been eliminated and the road brought up to standards of the Interstate Highway System. The highway, eight miles east of Sparks, has a steep, rocky cliff on one side and railroad tracks and the Truckee River on the other. A monolithic retaining wall, on the downhill shoulder, stabilized the slope.

The big problem was to provide enough extra level space to accommodate four lanes. The highway had to be widened to include two 24-foot pavements, a 20-foot median strip, 10-foot outside shoulders, and 4-foot inside shoulders. The Nevada Department of Highways awarded the contract for the road-widening job to Isbell Construction Co., Inc., Reno. This was the state's first project under the federal highway program.

Metal retaining wall

Isbell Construction's first step was to install Armco bin-type retaining walls, assembled from prefabricated steel parts, on the downhill slope. A total of 92 bins, each 10 feet long, make up approximately 920 linear feet of wall. The base widths of the bins vary from 5.5 feet to 14.3 feet. About 14,000 square feet of retaining wall, paralleling the center line, provides an adequate right-of-way through the former bottleneck.

The natural ground slope required retaining walls ranging from 5 feet 4 inches to 25 feet 4 inches high. When concave or convex curves were required, a shorter 9-foot 6-inch stringer was used either in the front face or the back face of the wall. Extra 16-inch stringers were installed on the top of the wall as a rock fence to keep slides and debris off the railroad tracks below.

A level space was excavated out of the slope of the hill. Trenches were dug for the column base plates, bottom stringers, and spacers, and the original soil was left intact in the center of each bin.

Foundations under the column base plates were cleared of debris, sod, and unstable soil. Rocks were removed and soil backfill used to provide a cushion for the wall to adjust to small differential settlements. The wall was placed on a 6 to 1 batter, with the front toed in 2 feet 8 inches to resist sliding.

Granular backfill was placed inside the bins in 6 to 10-inch lifts and thoroughly tamped to assure necessary weight of fill in the wall to prevent later settlement. The backfill behind the wall was kept at approximately the same level as that inside the wall to prevent unequal soil pressures. After the bins were filled, they were topped with material for the highway base.

The old road and the monolithic retaining wall were removed when the first lane was graded. THE END

For more facts, circle No. 223→

THE TAKE-CHARGE D9

—built big and tough for the big, tough jobs

- 320 HP at flywheel.
- 30-ton weight.
- Exclusive Caterpillar oil clutch — plates cooled and lubricated with oil, rarely need adjustment.
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KING OF THE CRAWLERS

Working ahead of the paver on one of the three separate jobs on the Mill Creek Expressway near Cincinnati is a Gar Wood-Buckeye subgrader. Excess material is cast to the shoulder.

A Koehring 34-E paver raises its skip to charge materials into the mixers while a workman sprays water on the subgrade. Water is supplied to the paver through a 1½-inch hose connected to a 2-inch pipe along the right-of-way.

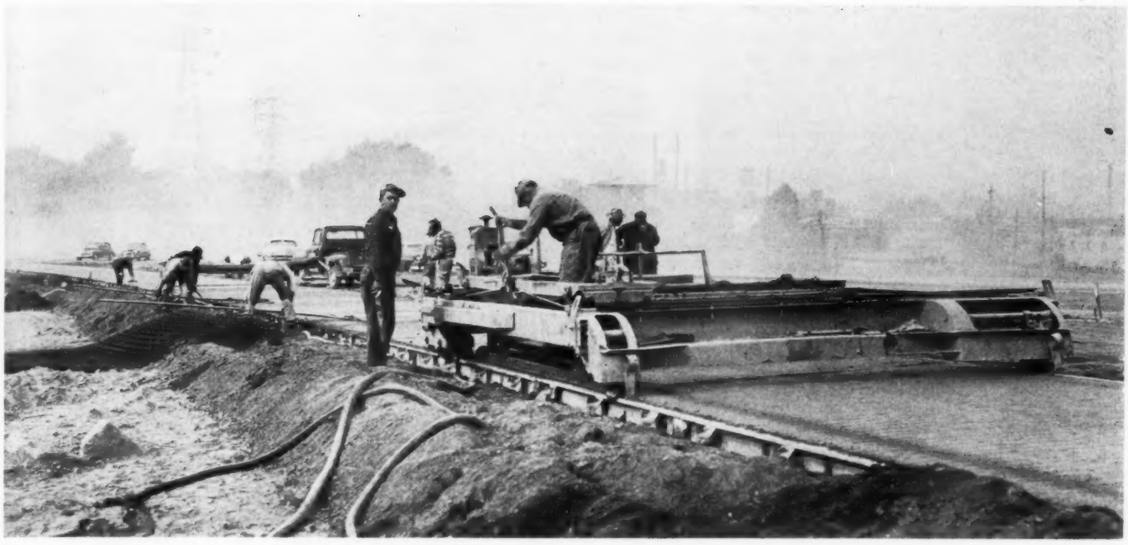
Fast-moving equipment spreads shape new expressway projects

Grading, concrete paving done simultaneously on three sections; centrally located batch plant supplies crews on all three contracts

by ANTHONY N. MAVROUDIS
field editor

The double-gated bucket of the paver dumps in front of the Blaw-Knox spreader, which trims the concrete to a depth of 6½ inches so that wire reinforcing can be placed. Paver and spreader move back to place the second lift.

After the second lift has been placed to bring the concrete to a 9-inch depth, a Jaeger double-screed transverse finisher smooths the slab. Note the electric vibrator attached to the spreader.



A Koehring longitudinal float follows the finisher to smooth out the transverse ridges. Workmen dress the surface of the roadway slab with aluminum straightedges.

All phases of highway construction —grading, structure work, and concrete paving—are being done simultaneously on Foley Construction Co.'s Mill Creek Expressway projects near Cincinnati, Ohio.

The three contracts, amounting to over $11 million, involve about seven miles of six-lane expressway. Two of the contracts at the southern end, between Colrain Ave. and Vine St., are adjacent; the third, from Murray Road to Paddock Road, has a ¾-mile gap where an intricate interchange is to be built. Work on all three is scheduled for completion by the end of the year. When the entire expressway is completed, it will tie into relocated U. S. 25 to form the Dayton-Cincinnati Freeway.

High output plant

Largely responsible for the production of 2,200 linear feet of 12-foot-wide pavement during the 9-hour work days is Foley's high-production concrete batch plant. The plant, located along the stretch covered by the second contract, is easily accessible to crews working on all three contracts.

The Heltzel plant consists of a 1,600-barrel cement silo, and a 250-barrel cement compartment that is part of the plant's aggregate bin. In addition to the cement compartment, the aggregate bin has three other compartments, for the storage of sand, 1½-inch stone, and 1-inch stone.

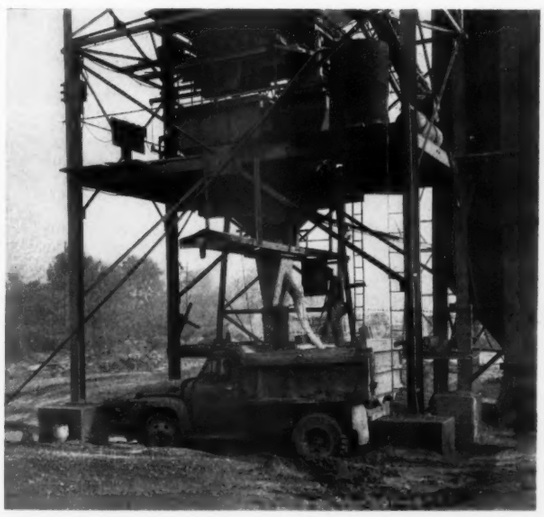
Two Hardy electronic scale controls—one for sand and one for stone —make the plant completely automatic during the weighing-dumping cycle.

Cement, delivered to the site by trucks, is charged into the silo via a hopper, a screw conveyor, and the enclosed bucket elevator, in that order. A two-way chute atop the elevator permits cement to be loaded into the silo or compartment or transferred from silo to compartment.

(Continued on next page)

The Michigan 125A loader is dumping stone into the hopper that feeds a conveyor belt leading to the Heltzel plant. The operator positions the three-way chute to any of the aggregate bin compartments by means of electric controls at the hopper.

The Heltzel plant, electronically controlled, is completely automatic during the weighing-dumping cycle. Cement is charged to the 1,600-barrel silo by the enclosed bucket elevator between aggregate bin and silo. Atop the elevator is a two-way chute leading to the silo and to the cement compartment of the aggregate bin.



Cement and aggregates are dumped simultaneously into a Ford batch truck through a wedge-shaped discharge chute. A pipe extension and trunk lead cement to the cement box. Union Monotube piling has been welded to the cement box to facilitate loading.

Form setting is a fast job with an air hammer powered by a Le Roi Tractair compressor. Blaw-Knox 9-inch forms are being used, and they are kept set a minimum of 500 feet in front of the paving train.

(*Continued from preceding page*)

The aggregates, stored in three stockpiles at the plant site, are fed to the aggregate bin by a contractor-built conveyor, consisting of a 24-inch belt and Barber-Greene rollers. The conveyor starts from beneath an underground hopper which is charged from the stockpiles by a Michigan 125A front-end loader having a 1⅓-yard bucket. The stockpiles are arranged in a semicircle around the hopper, and the short haul distances make it possible for the Michigan to load continuously.

A three-way chute atop the 3-compartment aggregate bin permits sand, 1½-inch stone, and 1-inch stone to be loaded into their respective bin compartments. Electric controls at the ground loading hopper allow the Michigan operator to position the chute for any one of the aggregate compartments.

Cement and aggregates are weighed and dumped automatically by the Hardy controls. Two separate weigh batchers—for cement and aggregates—are used to keep the two apart. Cement and aggregates are dumped simultaneously from the weigh batchers to the batch trucks through a partitioned hopper. Aggregates fall through a wedge-shaped discharge, and the cement escapes through a cylindrical extension at the opposite side of the discharge chute.

The wedge-shaped discharge chute was fabricated so that aggregates would not pile up in the batch truck but would be spread evenly across the truck. A canvas elephant trunk attached to the pipe extension leads cement into the cement box of the batch truck. Short sections of Union Monotube piling, welded over the box openings, simplify the job of placing the elephant trunk in the boxes.

Paving spread

Foley is using seven Ford batch trucks with 2 and 3-batch capacities to haul the concrete mix to the paving spread. Each batch contains 815 pounds of cement, 1,446 pounds of sand, 1,580 pounds of 1½-inch stone, and 1,296 pounds of 1-inch stone. About 25 gallons of water is added at the paver.

The contractor has about 6,000 linear feet of Blaw-Knox 9-inch steel forms on the job and keeps a minimum of 500 linear feet of forms set in front of the paver at all times. Usually, enough forms for a day's pour are set in place before paving operations get under way. Forms are held in place by steel form stakes. These are driven by an air hammer powered by a Le Roi Tractair self-propelled air compressor.

Preparation of the 12-foot subgrade width between the forms is done by a Gar Wood-Buckeye subgrader that rides the forms and casts the excess material toward the shoulder. A scratch board is used to check the grade, which is compacted by a Buffalo-Springfield tandem roller.

Concrete is placed between the forms by a Koehring 34-E mixer, riding outside of the forms, which is kept supplied by the fleet of Ford batch trucks. Water is fed to the paver through a 1½-inch-diameter rubber hose, 300 feet long, connected to a 2-inch water pipe running along the outside shoulder of the roadway. This 2-inch line, connected to a metered fire hydrant, is moved ahead as paving progresses. The rubber hose is moved ahead 300 feet at a time as paving progresses. Foley is using this type of water supply, rather than tankers, because it assures a continuous supply of water and eliminates the shutdowns that are sometimes caused when a water tanker is delayed.

The Koehring paver discharges concrete in front of a Blaw-Knox spreader that rides on the forms

CP "Torque Control" Impact Wrench drive thousands of high strength bolts to exac tightness on the Carquinez Bridge. No hand torquing required. American Bridge erection crews find the 23 pound weight, th extremely short 15½" length, and the safely enclosed torqu mechanism of the CP-610 real "life savers" where footing i tricky and speed is important. Torque control to 600 foot pounds . . . can be used as a standard wrench for higher torques.

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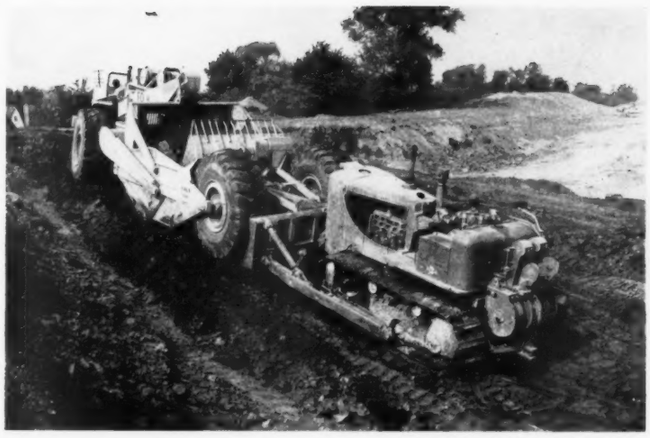
Anytime there's a high demand for air you'll find CP "Power Vane" Rotary Compressors ready for action. "Power Vane" Rotaries have the ability to provide maximum output with minimum attention—do work-horse jobs with little margin for failure. Capacities: 125; 210; 365; 600 and 900 cu. ft.

Known for its excellent tramming, high productivit the Tracdril features 6" channel co structed drill carriage; Oliver tracks; knee actio hydraulically actuated U-arm, drill carriage pos tioner, and sliding cone. Mounts one of two heav duty deep-hole drills with standard-neutral-revers rotation for use with coupled steel.

Earth and shale are loaded into a Mack dump truck by a Lima 803 shovel with Amsco 2-yard bucket during relocation work for an existing section of Central Parkway. Relocation was done when excavation caused excessive settlement.



A LeTourneau-Westinghouse Model B scraper—one of the fleet of eight LeTourneau-Westinghouse scrapers at work on the three contracts—is push-loaded to its 27-yard capacity by an Allis-Chalmers HD-16 tractor.

and trims the mix to a depth of 6½ inches. This permits workmen to place the welded-wire reinforcing, which is designed to be 2½ inches below the slab surface. Two electric vibrators, powered by an Onan generator on the spreader, are pulled by the machine to consolidate the mix adjacent to the forms.

Once the wire-mesh reinforcing has been positioned, the spreader backs up with the paver so that an additional 2½-inch lift of concrete can be placed over the mesh.

Following the spreader is a Jaeger double-screed transverse finishing machine which smooths the 9-inch slab pour. This is followed by a Koehring longitudinal floating rig, which smooths out the transverse ridges formed by the finisher, and a crew with aluminum straightedges. The slab surface is then finished with a burlap drag before being sprayed with a curing compound by a Heltzel spray machine.

Transverse joints, spaced every 60 feet, are formed without the paving train being slowed or stopped. Metal fillers, supporting twelve 1-inch dowels spaced on 12-inch centers, are held in place by wire chairs and protected by a removable metal cap. This cap, removed after the Blaw-Knox spreader passes over it, permits the joint to be formed by an edger.

Forms are stripped the following day. This operation is speeded by the use of an Ingersoll-Rand pin puller to remove the form stakes. Crews load the forms onto a flat-bed truck to be hauled ahead of the paver and repositioned.

The two 36-foot roadways will be separated by a 10-foot grassed median and will have 10-foot stabilized outside shoulders and a 6-inch inside curb.

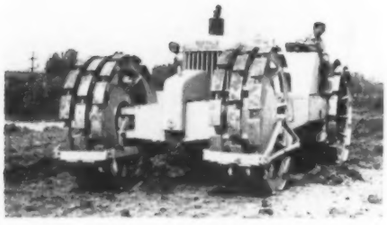
Grading expressway

Foley is using a fleet of eight LeTourneau-Westinghouse Model B scrapers and two Model C's to handle the earth excavation on the contracts. On the southern contract alone, over 850,000 cubic yards of roadway excavation was required. Allis-Chalmers HD-16 tractors are being used to spread fill and push-load the scraper fleet.

On one of the sections, the contrac-

For more facts, use Request Card at page 18 and circle No. 224

(Continued from preceding page)



Compaction of fills is done by this Buffalo-Springfield Kompactor. The many pads on the four large wheels provide good compaction.

A Lorain truck crane lifts a 70-foot-long steel girder into place for an interchange structure on the expressway.

tor had to relocate the existing Central Parkway 100 feet to the east because of excessive settlement caused by expressway ramp excavation. After the adjacent expressway had been excavated, slides caused a 1,700-foot-long stretch of Parkway to settle. Retaining walls on a pile foundation were used to support the existing Parkway fill, but after a short stretch was built, cracks and excessive movement resulted.

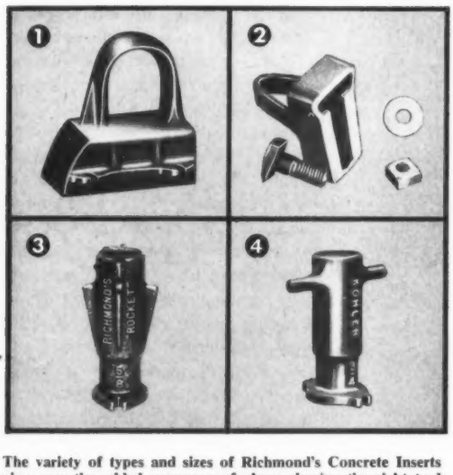
It was then that the contractor decided to cut the existing roadway 100 feet back into the hill and shape the hill with a gentle slope. This called for the removal of over 190,000 cubic yards of earth and shale. A gentle slope between the new Central Parkway alignment and the expressway ramp was shaped to prevent further mishaps.

Personnel

Robert Itin is the project superintendent on all three contracts for Foley Construction. Louis Hebel is the paving foreman; Howard Lawrence, the grading foreman; and L. E. Dauner, the structures superintendent for the contractor. D. L. Riddiough is the project engineer for the Ohio Department of Highways on one contract, and James R. Grant is the project engineer on the other two contracts. THE END

Richmond Concrete Inserts speed the job... Safely and Economically

Fastening to concrete made safe and easy by versatility and strength of Richmond Concrete Inserts



The variety of types and sizes of Richmond's Concrete Inserts gives you the added assurance of always having the right tool for any hanging or anchoring job. These products are laboratory tested and you can rely on their recommended working loads.

1 Richmond Malleable Adjustable Inserts—rugged box castings designed to take the head of a standard machine bolt. The ribbed sides of the box and the ample loop provide bond and anchorage. Adjustment is obtained by moving the bolt in the slotted face of the insert.

2 The Peerless Wedge Shelf Angle Insert—a malleable iron casting whose wedge shaped holding face works in conjunction with a special askew head bolt. Designed to hold shelf angle at an exact elevation for masonry veneer support. Wedge action prevents slippage when nut is tightened. Anchor loop can take a ¾" reinforcing bar to increase anchorage in concrete.

3 The Richmond Rocket Insert – a rugged malleable iron threaded insert especially designed for use where impact or vibration are a factor such as hanging air-conditioning machines, etc. The enlarged fins distribute the load back into the concrete.

4 Kohler Threaded Inserts by Richmond – the original threaded inserts designed to take a standard machine bolt or threaded rod for supporting hung ceilings, pipes, conduits, etc. Approved by Underwriters Laboratory for hanging sprinkler systems. Body shape and side lugs provide sufficient bond and anchorage.

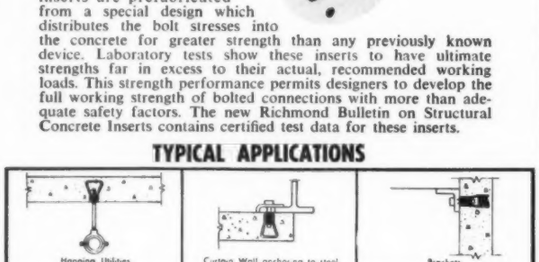
These inserts are provided with either holes or lugs which makes nailing them to the forms a simple, speedy operation with no need for drilling of decking or sheething.

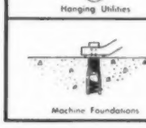
Available in ½" to 1½" diam. in strengths to 65,000 lbs. in 3,000 psi concrete

New Richmond Structural Concrete Inserts

a recent addition, these inserts are prefabricated from a special design which distributes the bolt stresses into the concrete for greater strength than any previously known device. Laboratory tests show these inserts to have ultimate strengths far in excess to their actual, recommended working loads. This strength performance permits designers to develop the full working strength of bolted connections with more than adequate safety factors. The new Richmond Bulletin on Structural Concrete Inserts contains certified test data for these inserts.

TYPICAL APPLICATIONS





Send for your free copies of this bulletin and the current Richmond Handbook which give you complete data on types, sizes, working loads and the varied uses of these inserts . . . and also show the full line of more than 400 Richmond-engineered Tying Devices, Anchorages and Accessories for the concrete construction industry—write to:

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Structural steel orders rise 6 per cent in April

New orders for fabricated structural steel in April showed a 6 per cent increase over March to reach a new high for the year, it has been reported by the American Institute of Steel Construction. This marks the fourth consecutive month when new orders have shown a gradual rise over the preceding month.

The total April bookings were 208,161 tons, higher than any month since November, 1957. The steel-fabricating industry's backlog of orders in April totaled 2,386,790 tons, or 6 per cent below the March backlog. Of this reserve of work on hand, 1,279,301 tons are scheduled for fabrication through August.

Massachusetts pike map spots points of interest

A new Massachusetts Turnpike map, available free of charge, shows the entire route of the turnpike and locates historical sites, state forests, and reservations. On the legend side of the map there are special instructions on turnpike driving.

Trip directions are given from the eastern terminus at Weston to points in Greater Boston. Ways of reaching the Connecticut Turnpike are described, and there are directions for traveling from the western end of the pike at West Stockbridge to the New York Thruway.

Maps may be obtained at all toll stations on the turnpike, or by writing to the Massachusetts Turnpike Authority, PR-8, 80 Boylston St., Boston 16, Mass.

Management

Planning and production:

Work analysis

This is the thirty-second of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, Satsuma, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.

by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

If a job has been started and costs are running high, the superintendent or project manager can take a number of steps to bring them back into line. Sometimes, unnecessary work can be eliminated or operations can be combined, changed, or simplified. High unit costs, of course, should be questioned the first time cost reports are examined and before the job gets out of line. In some cases, nothing can be done about high costs if a job is under way. But in other cases, the costs can be lowered.

For job-control purposes, the project manager or superintendent should have available a record of daily labor distribution, a monthly cost-to-complete estimate, and a daily or weekly labor unit cost report, for these will help in pinpointing high costs. Daily labor unit costs are used to advantage in the lighter commercial, industrial, and housing classifications; in fact, on all building operations. A time-saving method in preparing daily unit costs is to leave the computations on the overhead accounts for later in the day, or to summarize them only once a week.

Many of the charges to overhead accounts will not be repeated, and the project manager or superintendent cannot do anything about them; the money has been spent. If the overhead is out of line, because of personnel charges, any method to reduce the expense is taken care of on a weekly basis.

Costs out of line

One of the first steps in analyzing high costs on a job is to determine if labor has been itemized alone or if indirect overhead items have been included in the amount. For instance, if the unit is a square foot of forms in place, the contractor must find out what labor operations compose the unit as estimated. A check of the composite unit price used by the estimator may have included labor for stripping forms, while the cost report carries the labor of stripping as a separate unit. Or the estimator may have included the hoisting engineer's time, while the labor may be carried under plant and equipment on the cost report.

(Continued on next page)

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Geo. L. Duthrage & Son. INDUSTRIAL ENGINEERS — PROCESS CHART

☐ - PRESENT
☐ - PROPOSED

SUBJECT CHARTED: Acme Wire Box — DATE: 3/7/52
OPERATION: Truss unloading & erection — CHART BY: A.B.
DEPARTMENT: Steel erection — CHART No. 77
APPROVED ANSWER - LESSON #37 — SHEET No. 1 OF 1

DIST IN FEET	TIME IN MINS	CHART SYMBOLS	PROCESS DESCRIPTION
	15		Foreman assembles, truck, truck crane & 4 men.
5000	10		Crew travels to R/R siding.
	30		Loads trusses on truck.
5000	15		Truck & men to job site & crane waits.
	30		Unload truck by hand.
5000	15		Truck returns to R/R siding & crane.
	20		Crane loads balance trusses on truck.
5000	15		Crane & crew to job site.

Figure 1.

(Continued from preceding page)

Before the contractor concludes that the unit costs are excessive, he must make sure that the cost computations and the estimate units contain the same elements.

After singling out the item of work that costs too much, the contractor should determine if it is necessary. Often, work is done because someone has misinterpreted the specifications. The project manager or superintendent should be completely familiar with the contract documents, drawings, and specifications.

For instance, rough door bucks might be made and installed. But the finished frame could just as easily be set in place at the start of the job. The rough buck would not then be necessary.

If a contractor finds that the high-cost item cannot be eliminated, he must make a detailed study of the entire job to see if some operations can be done away with. If this is not feasible, perhaps unnecessary labor or materials can be eliminated. A plan, for instance, may call for an interior wall to be supported by an underground foundation wall and footing. The wall above grade could just as easily and practically be supported by a reinforced-concrete floor, since the total load is well within load limits. In this case, the underground footing and wall could be eliminated.

Union rulings

Who does the work on a job is, in most cases, defined by the unions. On open-shop construction projects, the superintendent or project manager is free to allocate any one of the trades to do work of any nature, or to delegate it to common labor if that is the efficient and economical thing to do. In certain cases, it might be more expedient and economical to employ skilled labor.

The possible economies that would result from substituting persons with less skill usually mean changing the method or equipment on a job. This should be done only after fully considering the attitude of the labor unions having jurisdiction.

Instead of using people with less skill and training in the field, the contractor may try prefabrication off the site. This enables him to hire a minimum labor force. If such work as prefabrication, prestressing, post-tensioning, and lift-slab and tilt-up panels can be turned out more economically by manufacturers, then the contractor must consider whether or not unions would permit their members to handle the assembly and what restrictions may be imposed. If it is an open-shop job, then unskilled workers may be able to handle the bulk of the erection at a large saving in cost.

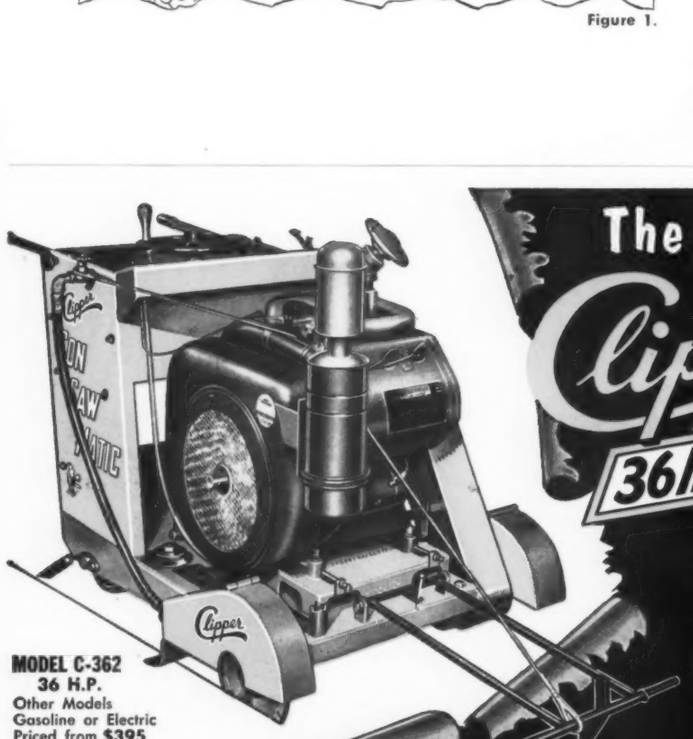
Influencing factors

Weather has a great deal to do with the success of all building operations, and an accurate forecast and proper scheduling of work have a great influence on costs. Schedules must be flexible and subject to change at a moment's notice, and labor that cannot be used during bad weather must be removed from the payroll. During bad weather, the superintendent or project manager should personally check each portion of the job, making sure that men who are not needed are taken off the payroll.

Some work may have to be adjusted because of the weather or high costs. For instance, a ground-floor slab, scheduled to be poured after the roof is on, may well be placed before the superstructure is started.

Gang process chart

One of the best ways to get a clear picture of the job is to write down each step or operation as it is performed. The breakdown should be made on the job and not from mem-



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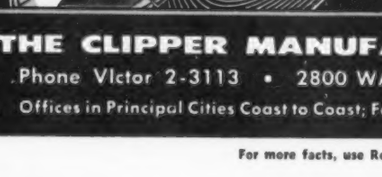

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ory. A detailed picture of all operations is obtainable with the use of a simple process chart, such as is shown in Figure 1. The project manager or superintendent lists steps and operations in a process or item of work, in their proper sequence, so that they may be identified as operations, delays, or storages.

Another way to analyze a job is to use a gang process chart, Figure 2. The chart contains four symbols: a large circle, a small circle, a square, and a triangle. The large circle denotes an operation; the small circle, transportation; the triangle, storage or delay; and the square, an inspection or approval. If the large circle is all or partially blocked in, it is a "do" operation—something actually done to change the shape or form of a product.

The project manager or superintendent should check on what specific crews are doing and what they are accomplishing, reducing the whole to a unit cost. If he jots these facts down on the gang process chart, and keeps all the charts, he will have excellent and factual data on cost information.

The gang process chart may be used to advantage in visualizing all steps and operations making up a composite unit price. Where the work to be figured is simple, it may not be necessary for the estimator to prepare a chart.

But some jobs present so many contingencies that the only safe practice is to quote on a time and material basis. If the owner insists on a lump-sum or unit-price bid, the contractor must either load his bid in order to be safe or else come up with a price on the desired basis.

A good lump-sum or unit-price is not difficult to make. Assume, for example, that there is a request for a price per square foot for 4-inch-thick, self-supporting corkboard partitions to be installed throughout a 6-story plant. Specific locations are to be selected by the owner from time to time during the fiscal year. The contract agreement is to extend over the period of the next fiscal year.

If the job is secured, the contractor has to install a definite number of partitions at selected locations. He will be paid a price per square foot of finished partition.

It is a mistake for an estimator to start and figure this—or any—job until he has examined the premises and gained a thorough picture of the site and site conditions. He should visit the plant, look over the job conditions, take the required measurements, examine the facilities for getting materials in and out, check the sanitary conditions to be maintained, and check the size and location of elevators.

Instead of making one chart for this work, it is much more convenient and accurate to split the job into three different parts, with a chart for each.

Applying gang charts

When the client gives the go-ahead to the job, the foreman visits the plant and the specific location of the partition, takes the measurements and determines the number of men needed. He returns to figure what materials will be needed and requisitions them so that he can start work the following morning.

In the morning, a half hour will be spent loading the materials and delivering them to the job site. The material truck and crew are at the site. The work is on the third floor, and the service elevator is 50 feet from the unloading spot. By the time the materials are unloaded, placed in temporary storage, and made ready to go up by elevator, the crew will probably lose another half hour.

(Continued on next page)

Gang PROCESS CHART

Dwg.No. LP - 1 — Chart No. 8
Subject Exc. Form & Conc. Piers — Location Baltimore
Date 2/10/52 — Cont.No. 1780 — Code See Tickets — Charted By RGD
Work Cycle Form Piers & set Pole later — Unit 1
Est.Quantity 1 — Dept. Const. — Est.Cost — Actual Cost $20.77 ea.
Equipment Hand Tools — Present
Supt. Deatherage — Foreman Clark — Proposed

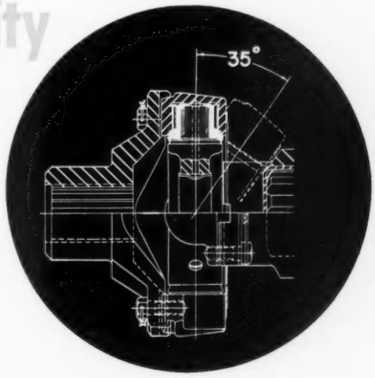
Hourly Rates. 3.00 2.50 2.50 1.25 1.25 3.50

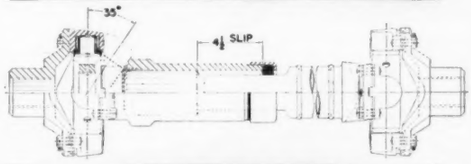
DIST	TIME	FOREMAN	CARPENTER	CARPENTER	LABORER	LABORER	TRUCK	COST	No.	No.in Gang / Steps. / Step Discription
	20	(1)	(1)	(1)	(2)	(2)	(2)	2 67	1	Layout exc & Trsfr. grade
	60		(4)	(4)	(3)	(3)		2 62	2	Move tools & Equip.on & off
	30		(5)	(5)	(6)	(6)		2 50	3	Excavate for Pier 2/3 yd.
	15	[8]	(2)	(7)	(7)	(7)		5 00	4	Make Form - & Sleeve ass.
		Return to s rip and backfill						2 50	5	Set & Braces Form

by

Figure 2.

Solve Your High-Angularity and Long-Slip Problems by Specifying —





MECHANICS

Designers with JOINT problems have learned to rely on MECHANICS. In the road building and agricultural fields, for example—where joints must run all day at constant angles up to 45°—where there are severe shock loads—where wide angles *and* long slip are common—and where dirt and/or moisture are continually present—MECHANICS Roller Bearing UNIVERSAL JOINTS are the accepted solution. Lifetime or once-a-season lubrication is so tightly sealed in that dirt and moisture cannot enter. If you have a "tough" joint problem, it will pay you to make use of MECHANICS engineers' wide experience in solving power transmission problems in hundreds of different fields.

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(*Continued from preceding page*)

The foreman has visualized one helper for the two carpenters, and two laborers to get the materials up to the third floor. The work is 60 feet from the elevator. The crew can use the elevator when it is not in use by the owner.

While the laborers are getting part of the material to the third floor, two carpenters are instructed on layouts. They then drill holes for the door buck anchors. This takes another half hour. The foreman, truck, and driver return to the warehouse or to other locations.

At this point the actual work of fabricating and erecting the partition can be charted.

Charting the work

A ½-inch-thick cement plaster needs to be put on in two coats—a brown coat and hard-finish coat. The work extends into two shifts, so that the brown coat can dry overnight. Two experienced men simultaneously work both sides of the wall.

Extreme care must be taken in transporting the cement mortar up to the third floor and through the corridors. The work place has to be covered with canvas and the material brought in by buckets, since elevators are not large enough to take wheelbarrows and the job is not large enough to demand hoisting.

Ingredients for the mix come to the job sacked. A mortar man is on the job an hour ahead of the shift starting time to mix the cement plaster and have it ready to transport in buckets.

The estimator develops a cost summary per square foot. In one column he gets the subtotals of labor for burden, carpentry and corkboard, and the cement plaster. In a second column the estimator is concerned with materials. He figures the subtotals of materials, plus labor and 10 per cent insurance, to arrive at a combined total of labor and materials. To this is added 10 per cent overhead and 15 per cent profit to secure the bid total per square foot.

To justify the cost the estimator tabulates another gang process chart. Filling up 30 sacks of cement and carrying them to the truck-loading site takes two laborers an hour. The foreman, two laborers, and the truck driver take 30 minutes to load up materials, mortar box, and other tools.

After a 15-minute drive to the site, the men are allowed an hour's time to unload the truck and get water to mix the mortar. Two of the laborers are on the third floor hanging the tarps. The truck driver is helping out wherever possible. The driver and the truck return to the warehouse.

Two men carry mortar in buckets up the elevators to the plasterers. These men will need to keep the elevator and floors clean at all times, and serve the mechanics with any other tools or equipment that they need.

The two plasterers brown out 44.4 square yards of cement plaster. They may be slowed up at times when the elevator is tied up. Even though they take less than a full shift for this job, they will be paid for a full shift, since they can not brown out in less than four hours.

Two men and a truck are allowed 1½ hours to clean up. This means taking down tarps and scaffolds, cleaning the floors, and getting the tools off the job. The foreman takes one hour to inspect and approve the job.

With this detailed information to support the price, the contractor will probably have no difficulty in convincing the owner's engineer that the price is right. Without the details, no amount of argument would be able to convince the owner that he was not being overcharged.

New estimating method

A newer method of estimating is based on production per shift crew, as opposed to individual man-hour production. The work presents production and costs tied to a basic shift crew which comprises the foreman, mechanics, helpers, laborers, and equipment operators. This type of estimating is based on the fact that production and efficiency vary.

Low production can be attributable to low crew efficiency—from 25 to 40 per cent of top production—in good times; to small volume of work; poor labor, job supervision, or job conditions; bad weather; poor methods and equipment; and numerous delays.

Average production is connected with 65 to 80 per cent crew efficiency in normal times. It is linked, too, to a normal volume of work; average labor, supervision, and job conditions; fair weather; and normal methods and equipment.

Top production is achieved with crews working at 90 to 100 per cent ability; good volumes of work; good labor, job supervision and conditions; as well as good weather, equipment, and methods.

From the production and costs calculated on the shift crew basis, the estimator may, by means of the tabular data presented, convert the costs for larger or smaller crews or

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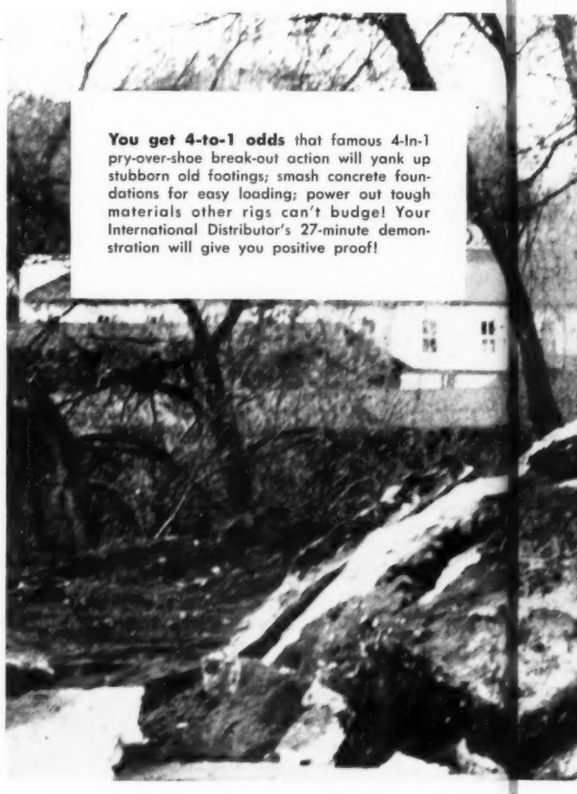

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arrive at the most efficient crew for the existing conditions.

Checking unit cost

The greatest use of gang charts is in checking unit costs on field operations, and particularly in finding the reasons for high costs or costs that are running over those estimated. The immediate investigation may take the form of a simple breakdown of the major elements in the work process, and this may be sufficient to pinpoint what is wrong. If it is not sufficient, the simple process chart may be used to cover every move made to complete a unit or cycle of work.

With this information at hand, the contractor can decide whether or not to make a complete analysis through the use of gang charts, which establish costs for each step or operation, and arrive at a total cost which agrees with the cost reported on the daily or weekly cost report.

(Next month's article will deal with "Planning and production: Checking the estimate".)

Strandberg firm moves

L. B. Strandberg & Son Co., Inc., building and bridge construction firm, have moved their offices to The First National Bank Building, 38 S. Dearborn St., Chicago 3, Ill.

E. N. Sonnier, center, of Sonnier Construction Co. demonstrates his fanned-flame technique to industrial realtor Leslie L. Appelt, left, and R. E. Hornberger, developer of Houston's San Jacinto Industrial District.

Fanned-flame technique makes for fast, profitable land-clearing operation

The simple trick of fanning a fire is bringing thousands of dollars of revenue to a Houston, Texas, earthmoving and road-building contractor.

During land-clearing operations for highways and other jobs, Sonnier Construction Co. mounts a 5-foot electric fan and a 50-gallon drum of diesel oil on the rear of a truck. A pump squirts the oil 30 to 40 feet into piled-up trees, trunks, and brush. After waiting a day or so for the sap to drain out of the wood, Sonnier lights the pile, starts the fan, and in a few hours the mountain-size pile is gone.

The latest use for the device came during the clearing of three miles of timber for a highway through Houston's new San Jacinto Industrial District. The highway is the first unit of Houston's 94-mile Outer Belt, which will eventually encircle the entire city.

On another job, Sonnier Construction had to clear 86 acres for Harris County on the Houston Parkway near North Lake. The contractor was given 140 days to clear the land. With Sonnier's method of getting rid of cut wood and brush, the job was completed in 68 days.

Nevada issues road map for out-of-state driver

The Nevada Department of Highways has inaugurated a new program of tourist information with the publication of the Nevada Tourist Map, a supplement to the official state highway map. Terrain features are emphasized on the 18½×24½-inch map to give the viewer a semi-perspective picture of the state.

Driving instructions and mileage figures are included for the convenience of motorists. Points of interest are also listed and located.

This map is for limited distribution to chambers of commerce and information centers.

The highway department has also issued an official 1958 road map which incorporates several new roads, points of interest, tourist tips, and indexes to cities, towns, and radio stations. Eleven color shots of Nevada scenery and activities are included in the map.

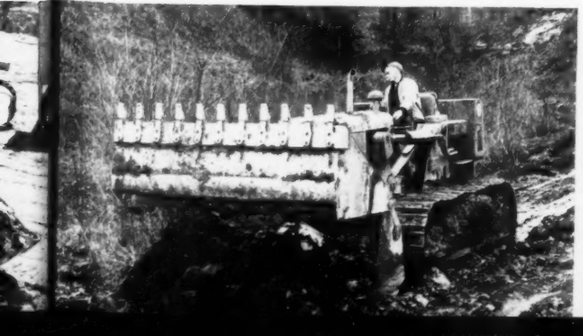
Copies of the map may be obtained from the Department of Highways, State Office Bldg., Carson City, Nev.

...onegives you 4-to-1 odds

...yle "single-action" loaders!

You get 4-to-1 odds that you'd need a bona fide, full-sized blade outfit, and a good one, to match the earth-rolling, hard-material-digging performance of the 4-In-1 as a bulldozer. You'll be amazed at the ease of regulating dozing depth with "radius control." This TD-14 4-In-1 is reconditioning a coal mine haul road in Floyd County, Kentucky!

You get 4-to-1 odds that the 4-In-1, as a clamshell, will pick up, carry, and load bulky, heavy, odd-shaped materials impossible for single-action rigs even to get in their buckets! *This TD-6 4-In-1 is carrying a big chunk of concrete footing from excavation to truck.* And as a clamshell, the 4-In-1 gives you a space-saving, *one-gulp* bucket fill especially in loose materials!



←For more facts, circle No. 229

Labor review

Work on construction projects valued at over $25 million resumed in Des Moines, Iowa, after a **19-day building trades strike.** Teamsters Local 90 was the last union to call its pickets off 35 sites, after reaching agreement with the Des Moines Construction Council on a two-year contract that will raise hourly pay by 19½ cents.

The first increase—12½ cents—took effect immediately, bringing the craft's basic hourly rate to $2.55, plus 6 cents for health-welfare insurance. An additional 7-cent increase takes effect next year.

Earlier settlements ranged from 12 cents to 15 cents this year. Bricklayers, Carpenters, Operating Engineers, Laborers, Lathers, Cement Finishers, Plasterers, and Teamsters all signed for the 12½-cent figure. Roofers took 12 cents; Painters, 13; and Sheet Metal Workers and Ironworkers, 15 cents. Bricklayers command the highest rate among the building trades—$3.92½ an hour.

An estimated 4,000 workers were idle during the strike.

* * *

What amounts to a legal memorandum **advising employers of their rights** under the Hobbs Anti-Racketeering Act is available from the Labor Relations and Legal Department of the Chamber of Commerce of the United States.

The basic premise of the pamphlet is that employers are victimized by union representatives because they don't realize where "economic coercion" ends and "extortion" begins.

The Chamber's pamphlet, "Extortion—Employer Can Combat It", defines the crime as "economic blackmail" in consequence of which "an employer is induced to give up property—under threat of physical violence to himself, his family, or his property, or under threat of labor trouble." The Chamber says extortion may exist even where lawful objectives are involved, such as higher pay or shorter hours, "if violence or the threat of violence is used to achieve such objectives".

The pamphlet identifies the Hobbs Act as amended in 1946 as the federal statute covering the crime, quotes pertinent provisions of the statute, and points out that robbery also is covered. It declares that the law has become increasingly effective as the Department of Justice has begun to look harder for instances of extortion and racketeering, but says enforcement can become even more effective with employer cooperation—"in many instances, the law is as effective as the employer makes it."

The Chamber's pamphlet concludes with general and specific tips to employers on how to combat extortion in labor relations.

A single copy of the pamphlet is free on request. Prices will be quoted by the Chamber for bulk orders. The address is 1615 H St. N. W., Washington 6, D. C.

* * *

Oregon laborers returned to heavy construction projects after an 11-day strike during which their union negotiators hammered out a new three-year agreement with the Portland Chapter of the Associated General Contractors.

Wage rates, formerly ranging from $2.35 to $2.70 hourly, were increased 20 cents retroactive to March 1, with additional 15-cent increases due next January 1 and January 1, 1960. The retroactive date is a compromise between the union's demand for retroactivity to January 1, the date the old agreement expired, and AGC's insistence that the increase be put into effect on the date the new agreement was signed.

An estimated 3,000 laborers struck highway and dam construction projects valued at about $275 million. Early in the strike AGC members adopted a "strike against one is a strike against all" policy and shut down projects througout the state. The walk-out was called off temporarily at one point, however, when picket lines were withdrawn and laborers went to work to prevent threatened flood damage on Snake River dam projects.

* * *

Laborers went back to work in Bergen County, N. J., under a new three-year agreement that seemed to indicate that the strong **stand against wage increases** taken by members of the Building Contractors Association of New Jersey is paying off.

In an area distinguished for many years by its high pay scales and fat annual contract settlements, the union signed for no increase in basic pay ($3.10) this year, 5 cents next year, and 10 cents in 1960. However, the contract establishes a pension

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With this combination you save . . . on equipment, labor, operating and overhead costs.

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Compactor is easily raised or lowered by hydraulic power controlled from operator's platform. Permits the high speed of the grader to be utilized for maneuvering and dead-heading on the job and traveling between jobs. Saves time, permits more work to be done per day.

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Individual compactors may be detached and used as manually-guided, self-propelled compactors for confined areas inaccessible to multi-unit machines.

Compactor power unit can be used as a lighting plant or for operation of small power tools.

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GALION ESTABLISHED 1907

MOTOR GRADERS & ROLLERS

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fund that will cost employers 5 cents an hour this year, and 10 cents an hour beginning next year. A 10-cent health-welfare payment is scheduled to be carried over from the old contract.

* * *

Common Laborers Local 478 won its first **multi-employer contracts** in Dade County, Fla. In exchange, the union called off a scheduled strike and signed for three years with the Associated General Contractors and Home Builders Association.

Wages under the long-term pacts are based on a $1.58 figure from a Davis-Bacon prevailing rate determination early this spring. A 10-cent increase will become effective on ratification, 9 cents more on April 1, 1959, and a final 8 cents will be added on April 1, 1960.

Prior to this agreement, the Laborers bargained with individual employers. An AGC official says 17 of its almost 50 members were under contract with the union, which claims a membership of about 1,300 in southern Florida.

Most other Dade County crafts are working in the second year of three-year contracts with the two employer associations. Ironworkers, the exception, have been without a contract since March 31, 1958. At last report the union was in negotiations. There has been no work stoppage in the interval.

* * *

The conviction of a union business agent who **extorted money from a construction firm** by threatening to shut down construction jobs unless the firm hired useless and superfluous employees or made personal payoffs to the agent was upheld by the Court of Appeals for the Second Circuit (N. Y.).

Two construction firms, Smykla & MacLean, Inc., and Robert S. MacLean, Inc., were involved in the installation of granite blocks in bridges and highways, and their practice was to order their stone precut at out-of-state quarries to the exact dimensions they specified.

The business agent of the Granite Cutters Union contacted Smykla and MacLean and told them that fitters from his union must be put on the job. When Smykla explained that the stone was precut to size and no fitters were needed, the business agent cited the Regulations of the Stonecutters to the effect that where the stone was cut outside of the local jurisdiction "members of his local have got to be put on the job as fitters or stand by even though we may not need them". The agent then stated that by paying him a specified amount of money no fitters would be put on the job, and there would be no trouble. The employer paid up, and work continued without incident.

Approximately two years later, the business agent again used the same tactic. This time Smykla went to the FBI, and FBI agents took motion pictures of the meeting between Smykla and the union business agent at which Smykla turned over the money to the union agent. This was enough evidence on which to build a case.

The union agent was convicted by a U. S. District Court on an indictment charging violations of the Hobbs Anti-Racketeering Act. He was sentenced to two years' imprisonment on one count and received a suspended two-year sentence on another count, with probation of three years to commence after the expiration of the first sentence.

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Describes Breaker Balls. Bulletin 1255 covers Eagle Pile Hammers and Line Weights. Catalog 58 gives complete information on Eagle Washing-Classifying-Dehydrating Equipment for aggregate, stone and ore.

EAGLE IRON WORKS,
159 Holcomb Avenue,
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For more facts, circle No. 231

25 FEET per minute

with Parsons 150 Trenchliner

Whatever your work schedule calls for — drainage, irrigation, pipeline, or utility trenching — Parsons wheel-type 150 has plenty of capacity to fill the bill. This high-production trencher opens from 12 inches to 25 lineal feet of trench per minute — 16 to 26 inches wide, at any specified depth to 5¾ feet.

Accurate depth control

A hydraulic ram on vertical mast raises and lowers digging wheel with fractional-inch accuracy, maintains close grade tolerance at any depth. Another hydraulic ram tilts the mast, balances weight of wheel forward when traveling or trailer-loading. To handle a wide range of soil conditions, Parsons 150 has cast-steel buckets with self-sharpening, reversible "Tap-In" teeth — or quick-change gumbo buckets. Shiftable, reversible belt conveyor deposits spoil on either side of trench. Want to know more about the heavy-duty 150 Trenchliner? Your Parsons distributor has complete details. Call him today.

PARSONS COMPANY

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19 FEET DEEP ***with big 310 Trenchliner***

If your work requires extra-deep trenches, check into Parsons big 310 Trenchliner. It opens from 5 inches to 20½ lineal feet of trench per minute — 24 to 60 inches wide at depths to 19 feet. On most jobs this 310 is used with just one heavy-duty boom. However, for extra-wide trenches the 310 as a dual-boom machine cuts up to 6 feet wide, at depths to 12 feet-10 inches. Other Parsons sizes range from a small, mobile model on rubber to "big-inch" and 'middle-inch" wheel Trenchliners.

P800

CHECK PARSONS FOR TRENCH WIDTHS FROM 8 TO 72 INCHES . . . DEPTHS TO 19 FEET

For more facts, use Request Card at page 18 and circle No. 232

Powerful hydraulic dredge turns tidal flats into land for airport

The 30-inch hydraulic dredge Franciscan, built to specifications of Utah Dredging Co. by Yuba Consolidated Industries, Inc., Benicia, Calif., works on the 14-million-cubic-yard job. At the most distant point from the fill, the dredge pumped sand through 26,000 feet of pipe without the aid of a booster.

A powerful hydraulic dredge, pumping more than 14 million cubic yards of sand from the bottom of San Francisco Bay, has transformed tidal flats into new land for the expansion of the Oakland, Calif., airport. In spite of an extremely abrasive sand, which caused unusual wear on pump parts, pipeline, and land equipment, the fill was completed as scheduled in less than 15 months. Utah Dredging Co., a subsidiary of Utah Construction Co., Salt Lake City, handled the work under a $5 million contract with the Port of Oakland.

This dredge-built embankment marks the first construction step in the multimillion-dollar program for the development of the airport; base paving, and terminal facilities will be built rapidly. In this new portion of the airport, the runway, taxiways, and building areas now resemble a series of connected sand spits, the areas in between being either water or mud, depending to some extent on the tide. The dredge fill was placed to build one 8,600-foot runway, a parallel taxiway, four connecting taxiways, an area for terminal and service facilities, and another small area for instrument-landing facilities. Even the roads leading from the old adjoining airport to the new service area are long, narrow sandbars thrown up by the dredge.

Since approaches at both ends of the runway are completely over water, the new field should be relatively free of the encroachment difficulties which plague many airports. There is also room for the extension of the runway at either end, whenever desirable.

Dredge operation

The first step in providing a stable base for the future terminal building and other structures in the terminal area was the stripping of soft mud from the bottom of the area before the dredge fill was placed. This work was sublet to a small suction dredge.

NEW 56 HP.
WISCONSIN ENGINE
drives compressor delivering
125 cubic feet of air per hour

Another application for the new model VR4D Wisconsin Heavy-Duty Air-Cooled Engine!

COMPRESSOR STATISTICS: Complete compressor-engine unit weighs only 1675 pounds, yet produces 125 cubic feet of air per hour. Built by P. K. Lindsay Co., Inc., Everett, Massachusetts.

ENGINE FACTS: Largest in Wisconsin line and equipped with traditional features, V-type 4-cylinder VR4D model is rated from 43 to 56 hp. between 1400 and 2200 rpm.

Get complete specifications. Write for Bulletin S-207 today.

Also, ask for bulletin S-223 describing all models, 3 to 56 hp. ... single-cylinder, 2-cylinder and V-type 4-cylinder models. All models can be equipped with electric starting.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines
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For 6 ½" blast holes, our experience indicates that we can drill them faster and at a lower cost because we have combined the best in applied drilling engineering.

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MANUFACTURERS SINCE 1882

For more facts, use Request Card at page 18 and circle No. 234

An Allis-Chalmer tractor—one of four on the job—uses its rear A-frame and Gar Wood winch to drag a heavy 30-inch section of dredge line to a new location. The tractor also dozed sand fill into place.

Equipment undergoes severe test in placing 14 million yards of abrasive sand in less than 15 months for expansion project

One of the most useful pieces of equipment on finishing operations was this Michigan Model 380 tractor-dozer. The machine used its power to move sand great distances at high rates of speed. Its big tires provide good flotation in the sand.

A powerful hydraulic dredge, the Franciscan, took all of the sand fill from two adjoining borrow pits at the north end of the runway. One continuous excavation would have been made, except that a strip had to be left where the so-called southern crossing of the bay between Oakland and San Francisco is to be built. The borrow area, dredged to a depth of more than 40 feet, is included in the City of Alameda master plan as a future yacht harbor.

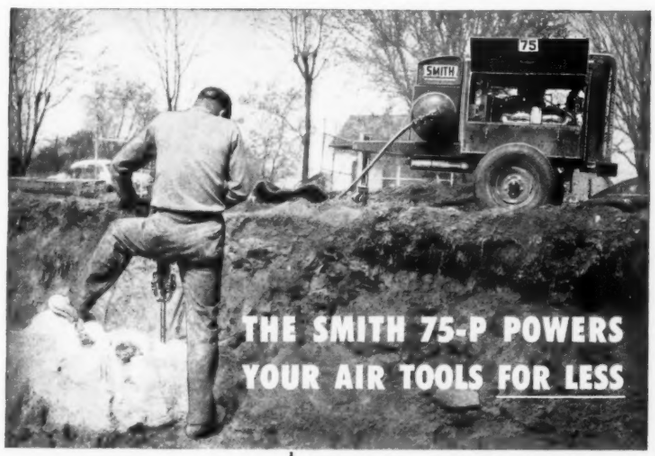
Unusually long pipeline

The relative location of the borrow areas and the extreme length of the embankment made it necessary for the Franciscan to use an unusually long discharge line. At the most distant point from the fill, the dredge was pumping the sand through 26,000 feet of pipe, and doing it without the aid of a booster.

In the borrow area, the dredge used up to 3,500 feet of 30-inch floating discharge line coupled with Mobile Pulley & Machine Works ball-and-socket joints. From the edge of the borrow area to the beginning of the embankment, the line had to cross two miles of tidal flats where there was not enough water to assure flotation at low tide. Across this area, the contractor built 11,000 feet of "crib line", consisting of the 30-inch pipeline coupled with Victaulic couplings and carried on timber pile bents.

The land line, running from the

(*Continued on next page*)



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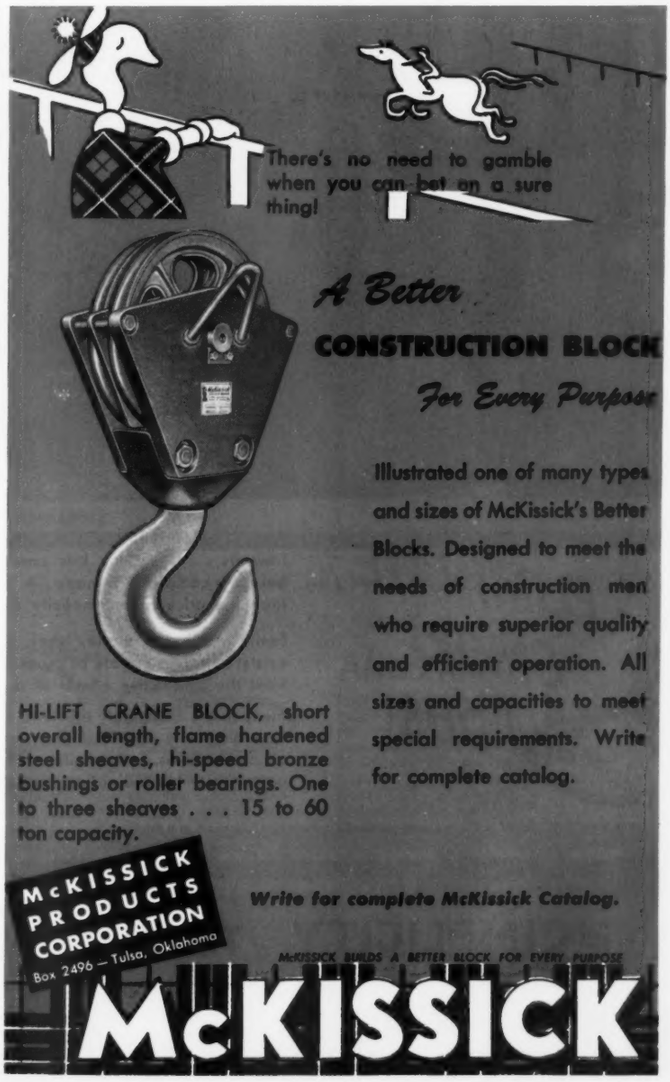
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Another job for an Allis-Chalmers HD-21 is shaping a road embankment. All four of the rigs on the job were equipped with Gar Wood power units and dozers, shop-built A-frames, and Cummins diesel engines.

Compaction and test rolling of the fill is done by a Southwest C75 ballasted to 90 tons and pulled by two Cat D8's. Gallagher & Burk, Inc., Oakland, are doing this under a separate contract with the Port of Oakland.

(Continued from preceding page)

beginning of the embankment at the end of the runway, was made up of 40-foot lengths of 30-inch pipe with slip couplings. These pipe sections were handled by Allis-Chalmers HD-21 tractors equipped with A-frames, and a similarly equipped LeTourneau-Westinghouse C Tournadozer. The tractors assembled the line of pipe and seated the joints by ramming the pipe home with their dozers.

The first sections of this pipe were to remain in place and in use for a long time as the filling progressed. This being the case, steel bands were welded across the slip joints to tie them together.

Since the fills were relatively shallow—ranging from 18 feet down to less than 4 feet—and since the embankment is a series of strips extending over an area some two miles long, moving discharge pipe was a continuing job. As many as eight big gear-and-ratchet-type gated wyes were used to keep the dredge going while new lines of pipe were added.

Tractors handle pipe

The burden of handling most of this heavy pipe and the wyes was taken over by four Allis-Chalmers HD-21 tractors equipped with Gar Wood power control units and dozers, plus shop-built rear-mounted A-frames. The contractor installed Cummins 270-hp diesel engines in the tractors on the job.

This was tough work for the tractors, for the dredge fill was an extremely abrasive sand which cut into wearing parts. Another hazard for the rigs was that of being submerged in a mixture of mud, sand, and salt water —something which happened whenever a tractor accidentally got into a soft pocket. The well sealed Cummins engines and Gar Wood power control units, as well as the Allis-Chalmers track rollers and final drives made damage minimal; tractors were back at work in an amazingly short time, even after being submerged.

The Tournadozer was also fitted with an A-frame, and it proved especially useful in moving the heavy pipe sections long distances across the fill.

Rubber-tire dozer moves sand

Even with a great deal of pipe moving, it was impossible for the dredge to put all of the material just where it was needed. The finishing operations were handled by the Allis-Chalmers HD-21 dozers assisted by a

ELIMINATE SMOKE and DUST

Prevent or quickly and satisfactorily settle many court orders and lawsuits . . . but it's lots smarter to eliminate smoke and dust **before** a complaint is made. A few days shutdown costs you more than the price of a Simplicity Air Washer!

Easily worth the money even where no neighborhood nuisance exists: Improves morale of plant crew. Protects expensive machinery from the destructive effects of dust and smoke.

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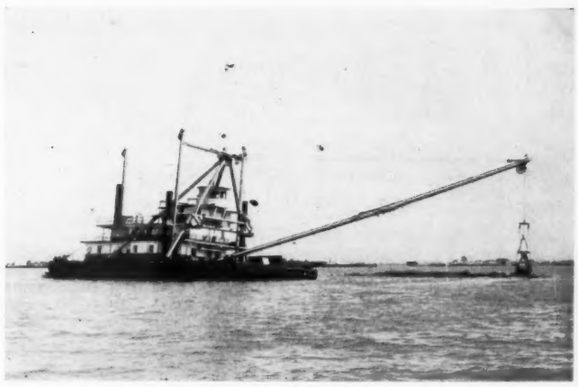
◄ The clamshell dredge Martinez uses a 4-yard bucket to help build mud dikes around the embankment areas to confine the dredge spoil. The Pointer-Willamette barged-mounted revolving crane carries 120 feet of boom.



The California, a dredge with a 160-foot gravity swing boom carrying a 3-yard clamshell bucket, handles the work of building up the mud banks around the fill area. ►

Michigan Model 380 rubber-tire tractor-dozer. The big 380 proved especially useful on the longer hauls. Its high speed in both directions, powerful pushing capacity, and good flotation enabled it to equalize high and low spots over a wide area in the dredge deposit.

Powerful dredge

The backbone of the entire operation was the big dredge, Franciscan, built to Utah Dredging Co. specifications by Yuba Consolidated Industries, Inc., Benicia, Calif. With a main pump powered by an 8,000-hp electric motor, she is the most powerful 30-inch hydraulic dredge on the West Coast, and probably one of the most powerful in the world. Her huge motor takes its power from a transformer bank on shore through a submerged cable.

A powerful sister ship is presently under construction at the shipyard of Pacific Coast Engineering Co. This dredge will have an 8,500-hp motor and a self-contained steam-turbine-driven generator to produce the electric power.

Because of the very abrasive nature of the sand, it was necessary to replace the pump shell, liner, and runner as often as twice a week. This resulted in a total of about 24 hours downtime a week while worn parts were replaced. There was very little other downtime as is shown by production: the dredge pumped an average of 950,000 cubic yards of material per month and kept to this figure for the entire job.

Attending the dredge were two towboats, two anchor scows with 30-ton cranes, and a big boom scow used to change the pump parts. The towboats doubled as personnel carriers, to transfer the three shifts of workmen from shore to the dredge.

Roller compacts fill

The Port of Oakland awarded a separate contract to Gallagher & Burk, Inc., Oakland, for the compaction and test rolling of the fill. This contractor used a Southwest C75 rubber-tire roller ballasted wth steel ingots to a total weight of 90 tons. Two Caterpillar D8 tractors pulled the heavy roller over the fill, with an assist from a third D8 whenever the roller bogged down in a soft spot.

The next contract for subgrading, drainage, and base is scheduled to be awarded this summer so that work

(*Continued on next page*)

For more facts, circle No. 238→

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Here is new convenience, new lightweight portability, new efficient performance, new rugged construction in a small one-man electric concrete vibrator. The new Whiteman Model SEW is so light it can be "worn" with handy harness, eliminating the need for long flexible shafts and moving heavy engines around the job. Despite its size, Model SEW produces 10,000 v.p.m. — does a thorough vibrating job. Small 1 5/16" head is perfect for narrow forms, between reinforcing bars and other tight places. Plugs in anywhere. Has a minimum of moving parts for easy maintenance and a long life of dependable service. Call your Whiteman distributor or send coupon for full information.

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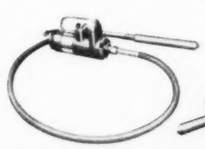
MODEL GW. Heavy-duty machine for big jobs. 6 hp gas engine. 10,000 vpm.



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MODEL SW. Small, compact. Gas engine. 4,000 vpm. For small to medium jobs.

Also NEW!

Model SLW is a new, lightweight portable machine for numerous job applications. 3500 rpm gas engine, 10,000 vpm. Between this new machine and new Model SEW, lightweight equipment is now available for every need.

Grinding, sanding and polishing accessories are available for most Whiteman Vibrators.

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(Continued from preceding page)

can begin when the compaction is completed. Utilities, building, and paving work will follow, with all facilities scheduled for completion in 1960 or 1961.

Dike construction

The mud and sand dikes are being built up with material dredged from the bay bottom by several clamshell dredges, including the California, which is owned by Utah Construction Co. This dredge has a 160-foot gravity-swing boom and handles a 3-yard bucket.

The Martinez, a clamshell dredge owned by Utah Construction Co., helped with the job of building the mud dikes. This dredge has a Pointer-Willamette barge-mounted revolving crane, with 120 feet of boom, that handles a 4-yard clamshell bucket.

The Martinez also helped place riprap on dikes built under a separate $1.1 million contract by Healy-Tibbitts Construction Co., San Francisco. These dikes are being faced with riprap around the bay side of the new embankments to protect the entire low-lying airport area from tide and wave action. Stone for the work is barged across the bay from South San Francisco.

Personnel

Supervision for Utah Dredging Co. was handled by a staff headed by project manager John Yasich, and including general superintendent H. G. Horton, master mechanic Chuck Jordan, civil engineer Jim Dunning, and safety engineer Earl Barker.

Port supervising engineer Roy Clark is overseeing the several contracts for the Port of Oakland. Design engineer for the Port is Al Dix. To assist in the supervision of the dredging, the Port engaged Russell Harris, retired president of American Dredging Co., as dredging consultant. THE END

Yale & Towne conference analyzes European market

At a three-day conference, sponsored by The Yale & Towne Mfg. Co. at Trianon Palace in Versailles, France, the firm appraised the eventual effects on its business resulting from the six-nation European Economic Community and the proposed broader Free Trade Area. The conference was attended by executives of Yale & Towne's headquarters in New York City, heads of its divisions in Germany and Great Britain, its export directors, its European licensees, as well as diplomats and common-market experts.

Intensive study was given to the Common Market treaty and proposals for a Free Trade Area as they will affect the material-handling equipment business. Analysis was made of the economic and political implications of the European Common Market, which is a proposed supranational economic community of The Federal Republic of Germany, France, Italy, Belgium, the Netherlands, and Luxembourg. This community, over a 12-year period, plans to move gradually to economic integration, through the elimination of internal tariffs and the free flow of capital and labor among the member nations.

Yale & Towne's executive delegates developed plans for sales policies, market research, expanding facilities, engineering and product development coordination, advertising, promotion, and public relations. These are geared to establish a working basis for participation in the expansion of the Western European economy.

Armco Steel subsidiary has new financing plan

The Armco Drainage & Metal Products, Inc., Middletown, Ohio, subsidiary of Armco Steel Corp., has a financing plan for purchasers of its line of prefabricated steel buildings. It is called the Armco Steel Building Budget Payment Plan, and features life insurance protection at no added cost and down payments which range from 20 per cent to 33⅓ per cent. Financing can be arranged through dealers or through the company.

Geared by FULLER...

New Diamond T's for Material Service Corporation

Hauling heavy loads into sandy, muddy construction sites is daily routine for Material Service Corporation. This well-known Chicago area supplier of construction materials and concrete products knows what this work requires of trucks: *heavy-duty components throughout!*

That's why Material Service specified Fuller 5-A-65 Transmissions in the recent purchase of Diamond T Model 830-32M Trucks.

Fuller Transmissions are designed for long and satisfactory service . . . for heavy loads, steep grades and the stress of constant shifting. Specify Fuller Transmissions wherever the "going's tough" . . . to deliver maximum horsepower through the *right* gear ratios . . . to speed work cycles at lowest cost! Get the facts from your truck manufacturer or truck dealer . . . or write Fuller Manufacturing Company for details.

Material Service Corporation's new Diamond T 830-32M's feature Fuller 5-A-65 Transmissions and Eaton-Hendrickson Tandems. Concrete pipe being loaded is typical of loads carried by this well-known construction material supplier.

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TESTER DIVISION

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Avoid legal pitfalls

Bid requirement clause was proved waivable

THE PROBLEM: *Bidding papers used on a Delaware state bridge project required the bidder to fill out a form certifying that "necessary commitments" for supplying cement, coarse aggregate, structural steel, and reinforcing steel had been obtained from named suppliers. The lowest bidder failed to fill out the form until requested to do so the day after the bids were opened. Was a taxpayer entitled to sue to enjoin award of the contract on that bid if, in the judgment of the highway department, the bidder was responsible for performance of his contract?*

THE ANSWER: No. (Bader v. Sharp, 125 Atl. 2d 499, decided by the Delaware Supreme Court.)

The court said that the case came within a clause under which the state highway department reserved the right "to waive technicalities" in acting on bids. The court reasoned: practically all courts agree that statutes regulating bidding on public works are designed to prevent the waste of public funds that could follow favoritism in awarding contracts.

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

But variations from advertised bidding specifications may be disregarded if award to the lowest bidder will not give him substantial advantage over the other bidders. Each particular case must be solved, in the light of its peculiar facts, by the question, "Has the successful bidder been given unfair advantage?"

It was not clear to the court just what purpose was intended to be served by requiring a statement of the names of suppliers from whom the bidder had secured "commitments", unless this was designed to help the contracting authority to determine the "lowest responsible bidder". That determination was necessarily made after the bids were opened. The requirement, being for the convenience of the highway department, can be waived if the department is satisfied that the successful bidder is responsible.

The court rejected the taxpayer's argument that the successful bidder was given undue advantage over the other bidders, because (1) they were put to the trouble of securing commitments from suppliers; and (2) they were bound to the suppliers from whom they obtained commitments if their bids were accepted, while the successful bidder in this case was left

(Continued on next page)

HUBER-WARCO motor graders

5D-190 . . . world's most powerful

The Huber-Warco 5D-190 MOTOR GRADER has been designed to make faster passes and smoother cuts for more profitable grader operation. Features include: 195 h.p. diesel engine . . torque converter . . . tail-shaft governor . . power-shift transmission . and NO CLUTCH. The operator sets the desired speed and the tail-shaft governor maintains that speed regardless of load conditions. The Huber-Warco 5D-190 is "power-packed" to handle a tough grading assignment quickly and efficiently. See your Huber-Warco distributor for complete details.

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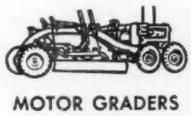
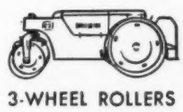

MOTOR GRADERS

TANDEM ROLLERS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☐ 5D-190 ☐ other motor graders
Send specifications on: ☐ Maintainer
☐ Tandem Rollers ☐ 3-Wheel Rollers

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HUBER WARCO

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free to "shop around" after becoming successful bidder.

As to the first point, the court said that it inferred from the facts, and it was likely, that the successful bidder had secured commitments from suppliers before bidding. As to the second point, the bidders were not legally obligated to deal with the suppliers after being awarded the principal contract. An ethical obligation to deal with those suppliers would not be enough, and the bidding specification involved could not be regarded as designed for the benefit of the suppliers named. But even if the moral obligation of the successful bidder were to be considered, it could not be regarded as showing that the successful bidder enjoyed any substantial or unjust advantage over the other bidders.

Contractors not liable for landslide damage

THE PROBLEM: *The courts generally say that if a contractor on a public works job carefully follows plans and specifications, without knowing or having reason to know that they are defective, he will not be liable to nearby property owners for resulting damage. A municipal sewer system was designed to replace individual septic tanks in a residential area. The city engineer knew that there were wet spots in the area and that slides had occurred. Specifications required power compacting of backfill of the ditches in the streets, but not along easements across private property between homes. The contractors conformed to the plans and specifications. After the work was completed, adjacent homes were damaged by landslides due to insufficient compacting of backfill. Were the contractors liable?*

THE ANSWER: No. (Hamilton v. Harkins, 304 Pac. 2d 82, decided by the California District Court of Appeal, First District, San Francisco.) The decision is subject to review and possible reversal by the California Supreme Court.

The decision was influenced by these facts: The contractors were not engineers. They visited the site before bidding on the job to determine how much machine excavation could be done, but did not test the soil and, apparently, were not required to do so by the bidding specifications. They were assured by the city engineer's office that the job was not different from other sewer jobs that they had performed.

The court said that these facts made the case differ from one in California, where the state Supreme Court decided that a contractor and a city were jointly liable for plaintiff's property, which collapsed into a sewer ditch. (Kaufman v. Tomich, 208 Cal. 19, 280 Pac. 130.) In that case, there was evidence showing that the contractor, realizing that the plan was defective, was also negligent. Other California cases, exempting contractors or holding them liable according to the facts of each case, were also cited.

Subcontract was voided

THE PROBLEM: *The prime contract for state-hospital construction was declared, in a taxpayer's suit, to be void for irregularity in the bidding. The low bid included bids of a subcontractor, and gave undue advantage over the other bidders for the prime contract. Was the subcontractor entitled to collect damages from the prime contractor, whose contract was annulled on a theory of breach of the subcontracts?*

THE ANSWER: No. (Boston Plate & Window Glass Co. v. John Bowen Co., 141 N. E. 2d 715, decided by the Massachusetts Supreme Judicial Court.)

The court reasoned: The prime contractor did not expressly warrant that the prime contract was valid, though this was assumed by both parties. The validity of the subcontracts depended on the validity of the prime contract.

In order for the subcontractor to collect damages on the ground of

To prepare new crushers for a hard life, Wasco County, Oregon, hardfaces rollers with Victor alloy rod. The rollers showed no discernible wear after crushing 3100 tons of extremely hard and abrasive basalt.

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FREE Victor Hardfacing Manual shows you right rod to use and how to apply it. Write us NOW for your copy.

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ALLOY ROD AND METAL DIVISION

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breach of contract, he was bound to prove that the prime contractor was to blame if the prime contract could not be carried out, and also that there had been a valid prime contract.

There could have been no valid prime contract, because another bidder was low under proper bidding. The court left undecided the question whether the subcontractor could have collected reimbursement for expenses incurred in preparation for the subcontract. The question might have come before the court if the claim had been worded to demand pay for such expense instead of damages for breach of the subcontract.

Vibrations cause damage to nearby building

THE PROBLEM: *Plaintiff, owner of a building abutting upon a street, sued defendant, a street-improvement contractor. The plaintiff alleged that his building was damaged and that the contractor so used a pneumatic hammer in breaking concrete that he knew, or ought to have known, that the vibrations were apt to cause damage. Assuming that proof to support the charge could be produced at a trial, would the contractor be liable in damages?*

THE ANSWER: Yes. (Acton Manufacturing Co. v. George M. Myers, Inc., 320 Pac. 2d 840, decided by the Kansas Supreme Court.)

The court said the fact that the city was not liable for the damage, because of governmental immunity, did not exempt the contractor. Under a previous decision of the Supreme Court, it is only when a municipal contractor is not negligent that he shares the city's immunity from liability for damage to private property.

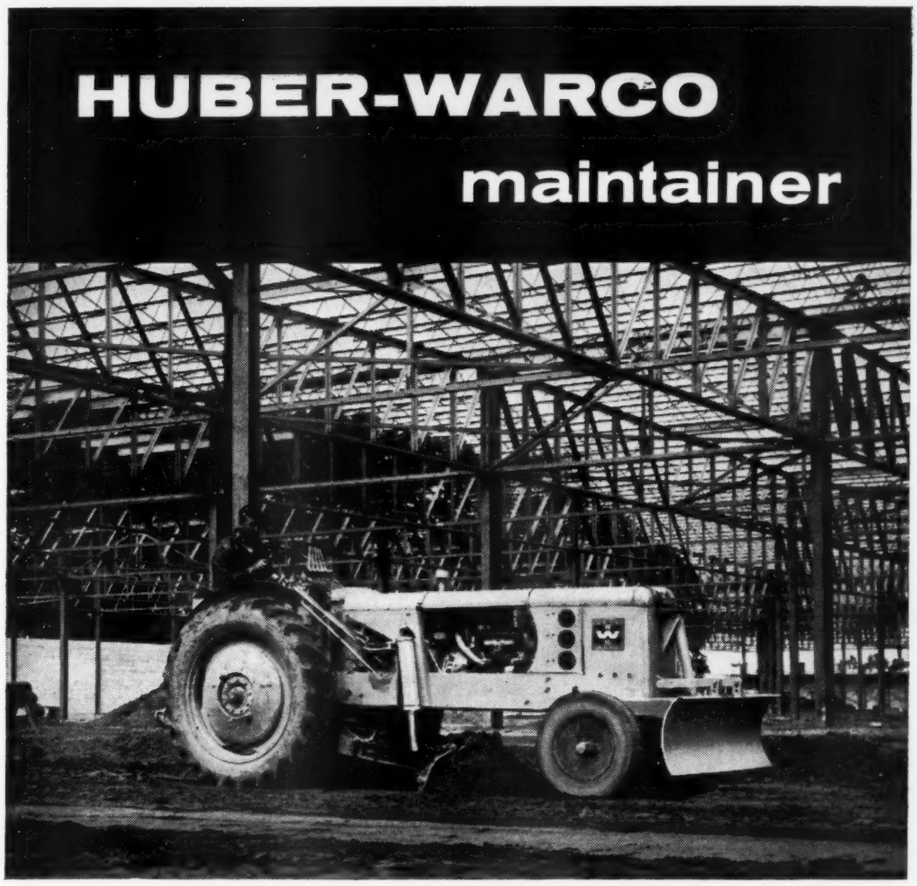
The court said that the complaint was not defective in alleging that the contractor "knew or ought to have known" the danger of using the pneumatic hammer in the manner cited. It was not necessary that the contractor be actually aware of the danger.

Truck stalled on track

THE PROBLEM: *A dump truck and ditching machine stalled on a double-track railroad crossing. On level ground the equipment had only a 10½-inch clearance. It stalled because one railroad track's elevation was 10 inches above the other, causing the machine to get caught on the higher track. Two trains, running in opposite directions, hit the equipment. The attempt to flag the trains was too late to avoid the accident. Was the railroad company liable for the damage?*

THE ANSWER: No. (New York Central Railroad Co. v. Sholl, 146 N. E. 2d 565, decided by the Indiana Appellate Court.) But the railroad's counterclaim for damage to its locomotives was dismissed.

The court decided that the difference in elevation of the tracks was justified by proper construction—the highway crossing had been properly sloped and maintained, and there was no reason to foresee such an accident.



grading inside a building framework

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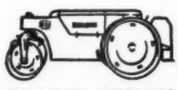
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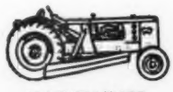
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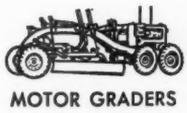
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HUBER WARCO

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Lightweight concrete saves on bridge steel

Use of lightweight concrete for deck of 1,391-foot viaduct makes it possible to reduce size of supporting girders

Lightweight concrete, made with Haydite expanded shale aggregate, is placed for half the roadway of the Daniel Boone Expressway viaduct in St. Louis by a Lorain crane. Transit-mix trucks will work from this half to chute concrete into place for the other half.

Lightweight air-entrained concrete, used to form the deck of a 1,391-foot viaduct in St. Louis, Mo., made it possible for the supporting girders to be considerably reduced in size.

The concrete, made with Haydite expanded shale aggregate, added only 102 pounds per cubic foot to the weight of the deck, as contrasted to as much as 150 pounds that would have been added if regular concrete had been used. The reduction in weight allowed the designers, Sverdrup & Parcel, Inc., St. Louis, to use eight comparatively light girders measuring 12⅜ inches across the flange and 44½ inches deep.

This particular design called for special construction techniques. The contractor, Samuel Kraus Co., St. Louis, had to use special care in handling the lightweight air-entrained concrete. Kraus also had to use care in adjusting the arched deck forms. And he had to follow a difficult pour pattern to distribute the load on the girders during the deck work. This often meant that he had to skip a section, then return to fill it in.

The lightweight concrete worked well with the proper handling, but crews learned how to control it only after they had had some experience with the mix. Weather had more of an effect on this type of mix than on regular concrete. Sun and wind speeded the loss of absorbed moisture from the Haydite concrete, and the contractor found he had to take weather into consideration when making pours. He found that the best days for pours were cloudy days with no wind. A careful control of the slump and the air content was also necessary to make the concrete work well. The operation went much more smoothly when the mix was not vibrated too much.

The Haydite expanded shale aggregate was wet down for 48 hours before being used in the mix. To obtain a 7-day flexural strength of 500 psi, the contractor used 7 sacks of cement per cubic yard. There were 200 pounds of Haydite used per sack of cement.

Design complicated

The 1,391-foot viaduct is the largest of five bridges built by Samuel Kraus Co. along an 0.8-mile segment

27 SELF-PRIMERS

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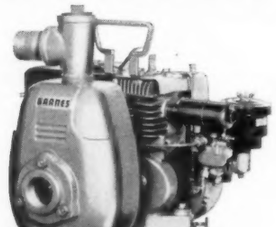
27 versatile models meet most construction needs—designed for any power source—deliver 2500 to 90,000 gph—available from one source of supply nearby!

You get the ultimate in reliable self-priming when you standardize on Barnes *Blue Ribbon Quality* pumps!

Barnes exclusive self-priming principle for centrifugal pumps incorporates a *free passage vent* adjacent to the periphery of the impeller. It defies clogging. *It primes without fail*—even with as little as ⅓ normal water level in the pump!

In your business, the chief test of any pump is in the years of continuous, low-cost operation it delivers. That is where Barnes self-primers stand out because every model is proved in our Blue Ribbon Quality Test Booth *before* entering the field! Ask your Barnes distributor for handy Construction Pump Selector #238—or write to us. Address Dept. B-78.



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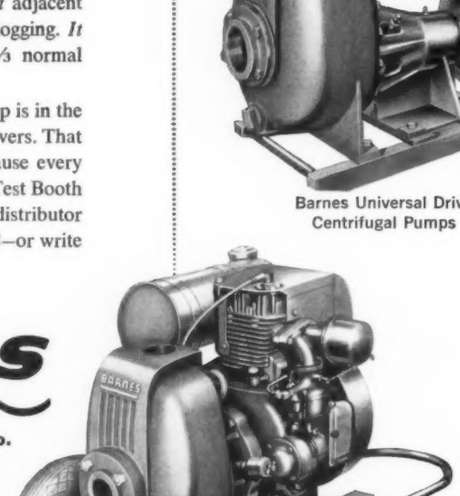
Barnes Universal Drive Centrifugal Pumps



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Barnes Electric Driven Centrifugal Pumps

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Carpenters work on the forming for the parapet wall bordering the escape walk at the edge of the bridge. Both wall and walk cantilever out from the outside bridge girder.

Lightweight concrete is chuted into the forms for the parapet wall by a Rex mixer mounted on a White truck. The mix is consolidated by an electric vibrator and finished by hand. The pipe cast into the wall carries wiring for bridge lights.

of the Daniel Boone Expressway in downtown St. Louis. The viaduct carries a 4-lane highway over Clayton Avenue, the Wabash Railroad yards, and Vandeventer Avenue. Since these streets and tracks pass under the viaduct on a severe skew, the design and construction of the overpass were complicated. The 14 continuous hinged-plate girder spans vary in length from 65 to 128 feet. The eight plate girders carry two 26-foot roadways separated by a 4-foot red-tinted mall. The roadways are bordered on the outside by 2-foot 6-inch escape walks and parapet walls. The walls carry aluminum rails and the posts for the bridge lighting.

Piers rest on H-piles

Thirteen of the 15 reinforced-concrete piers of the viaduct were seated on 14-inch H-piles. The footings of the remaining two piers were founded on rock. The contractor used a Lima 803 crane with a McKiernan-Terry air-operated hammer to drive the 18,000 feet of steel piles. These piles were driven from 30 to 110 feet to rock.

An interesting technique was used to form the caps of the T-shaped piers. In this arrangement, two 30-inch I-beams, on both sides of the tops of the columns, supported the Universal form panels for the cap. The horizontal I-beams were supported by vertical members resting on the column footings.

Steel goes up

The 2,711,000 pounds of structural steel used to support the deck was fabricated by Stupp Bros. Bridge & Iron Co. and Mississippi Valley Structural Steel Co., both of St. Louis. Ben Hur Construction Co., which erected the steel, used two motor cranes to handle the long girder sections. Ingersoll-Rand air wrenches tightened the high-tensile steel bolts used to make the connections.

Formwork is tricky

Forming was an out-of-the-ordinary job. The roadways had to slope ⅛ inch per foot, and this was provided for by haunches over the interior girders. The deflection of the girders under the ultimate load was also included in the haunch heights.

(Continued on next page)

CONTINUOUS RESEARCH AT CATERPILLAR LABORATORIES IS EXTENDING ENGINE LIFE THOUSANDS OF HOURS

EXAMPLE: Lube oil filter elements that give greater protection for longer periods at less cost

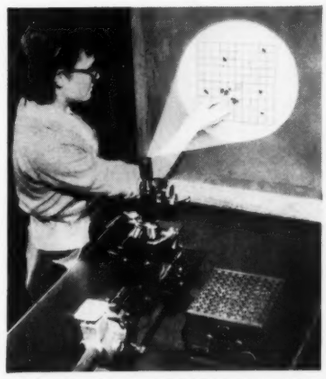
The development of new, additive lubricating oils has reduced oil change requirements. Cat filters have kept pace with these improvements. Cat filters have greater *dirt-holding capacity* to filter efficiently over the entire *extended* periods. This means a big saving to every owner of Caterpillar equipment.

FILTER TEST STAND adds controlled amounts of dirt to lube oil to check how much dirt an element can hold before plugging. Unless this is determined, replacement recommendations cannot be made. Of all the filter makes tested, only Cat filters completely met Cat Engine requirements.

Most oil filters of other makes fall far short of meeting Cat filter replacement recommendations—usually because they have *insufficient* dirt-holding capacity (not enough filtering paper) or they filter harmless, too-fine particles which quickly load up the element, opening the safety bypass. As a result, unfiltered oil is allowed to circulate, causing rapid, premature wear.

You can't get maximum engine life unless you filter *full time*. The best way to insure long engine life, peak performance and operating economy is to standardize on Caterpillar oil filters. They are the only filters you can count on to give full-time protection over the entire filter change period that is recommended for your Caterpillar Engine. See your nearby Caterpillar Dealer today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



PROJECTION MICROSCOPE magnifies 500 times particles that pass through filter paper so they can be measured. Since precision bearings ride on an oil film, particles smaller than the oil film can cause no measurable wear even after thousands of operating hours. Too-fine filtering shortens filter life needlessly.

CATERPILLAR

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This contractor saved $1,822.24 in one year in oil changes

SERVICE TIP

Complete information on oil changes is provided in Form 32421-1, *Crankcase Lubricating Oil Change Period Recommendations*, available from your Caterpillar Dealer. These recommendations are tested and proven. When used with Cat filter elements, you'll get maximum protection for your equipment at the lowest cost.

Many Caterpillar owners tend to play it safe by changing lube oil and filter elements far more frequently than recommended; thus they are willing to gamble on lower-priced, small-capacity filter elements. This is false economy. Here is an actual experience of a contractor, owner of eight Caterpillar D8 Tractors, who followed recommended procedure with Cat filters:

Past Procedure — Oil changed every 80 hours		**Cat Recommended Procedure — Oil changed every 150 hours**	
Lube oil @ $1.25 per gal.		Lube oil @ $1.25 per gal.	
9 gal. per change	$11.25	9 gal. per change	$11.25
filters @ $1.00 ea.		Caterpillar filters @ $1.14 ea.	
3 per oil change	3.00	3 per oil change	3.42
Labor cost	2.50	Labor cost	2.50
Total cost per change	$16.75	Total cost per change	$17.17
Ave. operating hours per year	2,400	Ave. operating hours per year	2,400
Ave. oil changes per year	30	Ave. oil changes per year	16
Total cost per machine per year	$502.50	Total cost per machine per year	$274.72
Total cost for eight D8s	$4,020.00	Total cost for eight D8s	$2,197.76

D8s — 2U, 14A and 15A Series Tractors • Lubricating oil used: Series III • Fuel sulphur content: .4% to 1.0%

For more facts, use Request Card at page 18 and circle No. 246

Carpenters work on deck forms, which are being hung from bridge stringers by Superior saddle supports. Workmen on the deck can adjust the height of the cambered forms. In the background, a Lorain crane lifts a bundle of reinforcing steel to the bridge.

trucks on the finished roadway.

As concrete was placed, it was consolidated by Homelite electric vibrators, then struck off by a screed vibrated by a Stow vibrator. Since only metal could be used to finish the lightweight concrete, the 26-foot wooden screed was capped with steel at the bottom.

After being finished by hand with aluminum floats, the concrete was dragged with burlap. Wet cotton mats were used to cure the slab.

Personnel

Samuel Kraus Co. was the contractor on this and four other bridges along the 0.8-mile segment of the Expressway. This stretch, known as the Market Street cutoff, carries the 4-lane divided concrete highway from Tower Grove Avenue into Market Street. Traffic congestion in this area has been greatly reduced, since rail and vehicular traffic now pass over and under the expressway. The entire segment was built under the Kirkwood District of the Missouri State Highway Department at a cost of about $4.1 million, including the cost of the right-of-way.

Sam Kraus, Jr., superintended the job for the contractor. Allen E. Brewer was resident engineer for the highway department. The Kirkwood district engineer is R. A. Currie, and the district construction engineer is W. R. Wallace. THE END

(*Continued from preceding page*)

The predetermined deflections were painted on the top flanges of the girders so that the deck forms could be built in a series of arches that would assume a straight grade as the concrete was placed.

The key to the successful forming of the deck was a Superior saddle support. The hanger made it possible for men working on top of the deck to adjust the height of the forms. This convenient method of adjustment proved extremely important in getting the forms to fit the designed arch.

The adjustable hangers held a group of three 3×6's which spanned the 8 feet 6 inches between the girders. These supported lengths of 4×4's running longitudinally on 2-foot centers. Topping the 4×4's was ⅝-inch plywood; small vertical sections of plywood were used to form the haunch over the girder.

After the formwork was in place, a Lorain motor crane lifted bundles of reinforcing steel to the deck. Ironworkers then set about wiring the two mats of ½ and ⅝-inch reinforcing bars.

Pour according to pattern

In pouring the deck, the contractor had to follow a fixed pattern so that the loading of the girders would be equalized. Actually, each roadway deck was divided into four sections, varying from 174 to 431 feet in length. One section had to be completed before another one was started. Each section was further broken down into as many as seven smaller units, and these had to be poured in a fixed sequence. This quiltlike pattern made it difficult for the contractor to plan the work efficiently.

Only half the width of the bridge was poured at one time. This was done in four steps: The roadway was poured and finished; one half of the mall was formed; the escape walk on the outside of the roadway was formed and poured; and, finally, the parapet wall was built.

Two methods were used to place the 2,300 cubic yards of lightweight concrete. A Lorain motor crane hoisted buckets of concrete to the first roadway. Transit-mix trucks, stationed on the street below, supplied the crane. The concrete for the second deck was chuted to forms from transit-mix

The Mackle Company
Brings Big Buildingto

C. I. T. Is On The Job, Too

Well-designed, low-cost homes . . . on highly desirable Florida pine land . . . in planned communities . . . these are the elements The Mackle Company has integrated into a highly successful building operation at Port Charlotte on the southwest coast of Florida. The 50-year-old Mackle Company is building the homes, putting in streets and sewers, developing beaches and fishing piers, and widening and deepening the extensive waterways throughout the 80,000 acre development.

C.I.T. Corporation is playing a helpful part here as in so many construction projects across the land. Over $175,000 worth of earth-moving equipment is being financed by C.I.T. Corporation for use by the creative developers of Port Charlotte.

How Job-Engineered Finance Plans Can Help You

Payd Plan equipment financing terms to 6 years with payment schedules related to depreciation, or equal monthly payments over 36 months, or skip-payment plans where needed . . . these are just a few of the helpful financing tools offered to you by C.I.T.

In addition to equipment purchase financing C.I.T. can help you improve your bid and bond capacity, meet current operating expense or other business needs by arranging capital loans. C.I.T. representatives know how to lay out "job-engineered" finance plans, carefully devised to fit your needs. Why not call or write? No obligation, of course.

C.I.T. CORPORATION • MACHINERY AND EQU

ATLANTA • BOSTON • CHICAGO • CLEVELAND • DALLAS • DENVER • DETROIT • HOUSTON • JACKSO
NEW YORK • PHILADELPHIA • PORTLAND • SAN FRANCISCO • SEATTLE • CAN

RCA installs radio system for Indiana State Police

The Radio Corp. of America, Camden, N. J., will erect a 228-mile microwave radio system for the Indiana State Police. This northern extension of the state's present 51-mile system will provide the various state police centers with voice communications, and also enable them to use teleprinter and facsimile. Weather and police information can be relayed on the teleprinter, and such vital items as fingerprint reproductions can be sent by facsimile transmissions.

A 100-mile-range switchboard will be located at Stout Field headquarters, but the system is arranged so that any one of the line points can function as an emergency control center. The $209,000 northern extension and the original system can be connected with any future spurs to the southern half of the state.

ARBA film encourages engineering as a career

A 15-minute 16-mm color film with sound entitled "Engineering Your Future", made with a professional cast in Hollywood, has been released by the American Road Builders' Association. Showing the national need for highway modernization and the major role to be played by men with engineering and scientific skills, the movie portrays in story form the economic opportunity and professional challenge offered to highway engineers of the future.

The film, designed for showings to various educational groups, may be purchased at cost directly through ARBA, World Center Building, Washington 6, D. C., in color or black and white, at $100 and $50, respectively. A limited number of prints is available on a loan basis.

NYU engineering building

New York University will erect a $2 million engineering and technology building at its Bronx campus in New York City. The reinforced-concrete structure, with 56,000 square feet of floor space, will be 227 feet long and 50 feet wide.

...gto Port Charlotte

Heavy tractors like this play an important part in clearing the high, pine land. The Mackle Company has a complete fleet including scrapers, cranes, dredges and low-bed trailers to move equipment where needed.

Mr. Elliott J. Mackle, President of The Mackle Company, discusses progress on the big, self-contained community with C.I.T. Corporation representative Jack Ebert. The job will continue into the 1960's.

...EQUIPMENT FINANCING

...HOUST...ACKSONVILLE • KANSAS CITY • LOS ANGELES • MEMPHIS
...SEATT... CANADA: CANADIAN ACCEPTANCE CORPORATION LIMITED

CIT CORPORATION

For more facts, use Request Card at page 18 and circle No. 247

Convention calendar

August 25–29 National Shade Tree Conference
Conference, George Vanderbilt Hotel and Public Auditorium, Asheville, N. C. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

September 20–26 American Society of Sanitary Engineering
Annual Meeting, Claridge Hotel, Atlantic City, N. J. James V. Crosta, chairman, ASSE, 68 Fairmount Terrace, East Orange, N. J.

September 21–25 Prestressed Concrete Institute
Fourth Annual Meeting and Convention, Edgewater Beach Hotel, Chicago, Ill. Philip Balcomb, PCI, c/o American Marietta Co., 101 E. Ontario, Chicago, Ill.

September 22–24 Associated General Contractors of America
Mid-Year Board Meeting, Atlanta Biltmore Hotel, Atlanta, Ga. James D. Marshall, executive director, AGC, 20th and E Streets N. W., Washington, D. C.

September 29–October 1 New York State County Highway Superintendents Association
Joint Meeting with County and Local Roads Division of American Road Builders' Association, Concord Hotel, Lake Kiamesha, N. Y. H. R. Mason, secretary, NYSCHSA, Fonda, N. Y.

September 30–October 2 Southeastern Association of State Highway Officials
Meeting, Tutwiler Hotel, Birmingham, Ala. A. Reese Harvey, secretary, SASHO, Alabama State Highway Department, Montgomery, Ala.

October 5–8 National Association of Corrosion Engineers
Symposium, Boston, Mass. M. M. Jacobson, NACE, Watertown Arsenal Laboratories, Watertown 72, Mass.

October 7–10 Short Course on Roadside Development
Seventeenth Annual Short Course, Columbus, Ohio. Wilbur J. Gramhausen, chief landscape architect, Ohio Department of Highways, Columbus 15, Ohio.

October 15–18 American Bridge, Tunnel and Turnpike Association
Annual Meeting, Hotel John Marshall, Richmond, Va. J. Allyn Stearns, executive secretary, ABTTA, P. O. Box 148, White Plains, N. Y.

October 21–22 National Slag Association
Forty-first Annual Meeting, Mayflower Hotel, Washington, D. C. NSA, 613 Perpetual Bldg., Washington 4, D. C.

October 23–24 Virginia Highway Conference
Conference, Virginia Military Institute, Jackson Hall, Lexington, Va. R. P. Ellison, executive assistant, VHC, 1221 E. Broad St., Richmond 19, Va.

HRB bulletin details alkali-aggregate reaction

"Alkali-Aggregate Reaction" contains three papers sponsored by the Highway Research Board's Committee on Durability of Concrete—Chemical Aspects. The first paper evaluates the quick chemical test for alkali reactivity of concrete aggregate.

Another paper describes the results of interferometer and excess ionic charge observations on swelling and shrinking of hydrated cement. The last paper reports how measurements with a special pressure cell show that, by this action, pressures in excess of 2,000 psi may be developed.

Priced at 80 cents, Bulletin 171 may be purchased from HRB, 2101 Constitution Ave., Washington 25, D. C.

Corps' Vicksburg District has big maintenance job

The Corps' Vicksburg District has this string of maintenance barges on the Yazoo River to service marine equipment that covers some 400 miles of river in three states. Included is a small-boat repair barge, pipe and welding barge, carpenter shop, floating dry dock, floating crane, and paint shop. The paddle-wheel boat, one of the few left on the river, removes snags from the river and sets buoys.

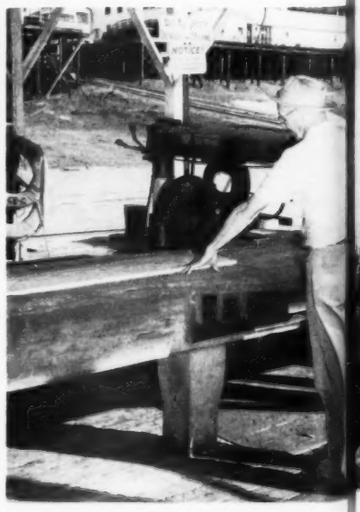
Equipment maintenance for the Vicksburg District of the U. S. Army Corps of Engineers is a big job spread over a big area.

Emergency repairs have to be made on some 300 floating plants, ranging in size from small survey boats to large hydraulic dredges. And this equipment, which often has to be repaired in the field, is spread over a three-state area and along some 400 miles of the Mississippi and Wichita rivers.

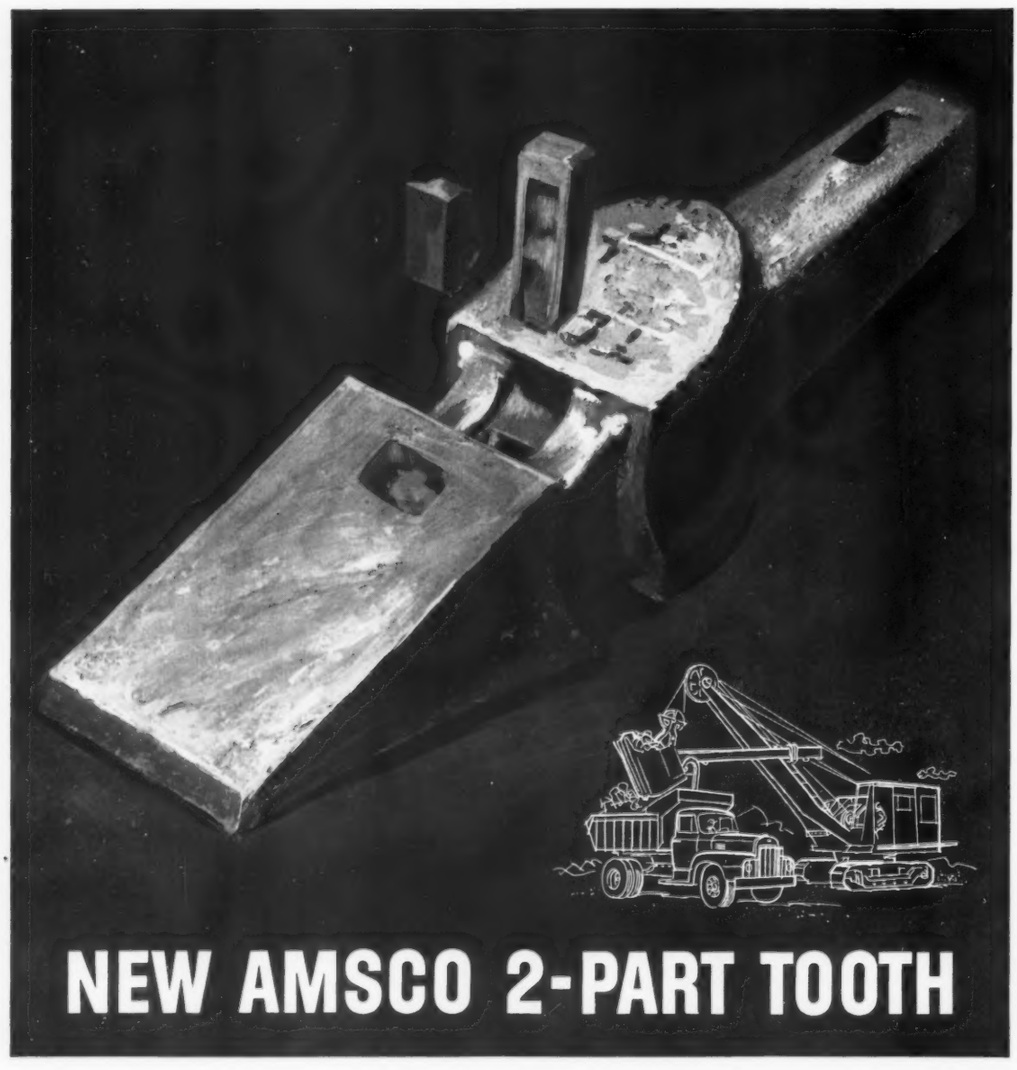
Despite the size of the operation, maintenance forces have been able to get repair jobs done safely and swiftly. Their success is in large part due to a well organized safety program, modern shop repair facilities, and an efficient communications system.

Making speedy repairs to operating equipment is extremely important in river work. Equipment downtime must be held to a minimum, since work on the river can be done only during low stages of the river's flow. And local repair shops are not equipped to service the specialized marine equipment. It is up to the district maintenance force to get to the job and repair a breakdown with a minimum loss of time.

The equipment owned and operated by the Vicksburg District of the U. S. Army Corps of Engineers is scattered over a large part of three states—



A workman operates a De Walt bench saw on one of the two barges that carry the carpenter-shop facilities. In background, land-based maintenance buildings of the Vicksburg District.



NEW AMSCO 2-PART TOOTH

Special-alloy reversible tips *(easy to reverse)* nearly double tooth digging life...

In quarry work, in cold and hot slag pits . . . in the roughest of digging tests, these new Amsco® 2-part Simplex teeth have outlasted competitive 2-part teeth more than 2 to 1 . . . at a big saving in tip and adapter replacement time.

You get this longer wearing quality because of the special, rugged alloy used for both tip and adapter. Reversing tips extends digging life even more, yet takes only a few minutes.

Adapters outlast several sets of tips, are equally easy to replace. Pin lock between tip and adapter seats and locks so securely, metal-to-metal, that even side blows can't jar it loose.

We'll be glad to send you a booklet containing reports by Simplex users and describing this new Amsco tooth completely. Write for it today.

AMERICAN Brake Shoe COMPANY AMSCO

American Manganese Steel Division · Chicago Heights, Illinois

For more facts, use Request Card at page 18 and circle No. 248

Swift repairs are needed for 300 floating plants as work can be done only during low-river stages

Out of the water for repairs is a 32-foot survey boat. At left is a barge-mounted 25-ton derrick equipped with a Clyde 3-drum hoist; at right, the Brown Hoisting Machinery Co. steam locomotive crane rides on rails on the barge.

Louisiana, Arkansas, and Mississippi. It is primarily used by the Corps for the operation and maintenance of flood-control facilities and navigation channels and structures. The work consists of dredging channels, stabilizing banks for the protection of trees, and maintaining efficient channel alignments.

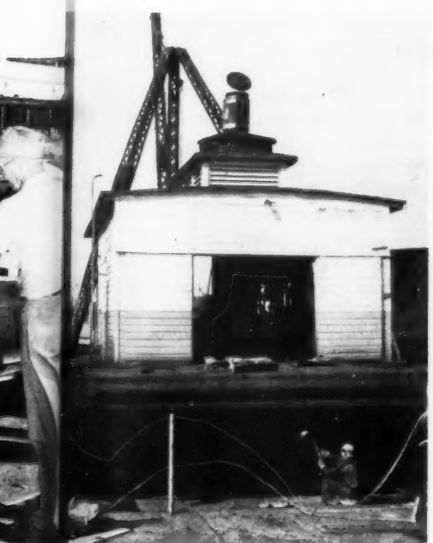
Among the units repaired by the shops are survey boats; towboats; barges; a concrete-mat sinking plant; a large barge-mounted river-bank grading plant, used in the preparation of the river bank for the concrete mats; tenders; tugs; and discharge boats used for measuring river flow. In addition, the Corps has a 32-inch dustpan dredge, a 12-inch cutterhead dredge, and a large paddle-wheel patrol boat that is used for removing snags in the river and setting buoys.

Well equipped repair shops

The repair shops are located on the Yazoo River about a mile north of Vicksburg, just above the point where the Yazoo flows into the Mississippi. One group of buildings is set on the banks of the river, and the remainder of the facilities are housed on a string of wood and steel barges anchored in the river.

Contained in the land-based buildings is a modern machine shop

(Continued on next page)



A crewman makes repairs to the hull of a maneuver boat in the floating dry dock. This dry dock will accommodate floating plants and boats up to 40 feet wide and 200 feet long.

Taming the Hoosic

Fast-moving tractor-on-rubber speeds widely-scattered assignments

Petricca Construction Co., Pittsfield, Mass., is working on 2 phases of the $30,000,000 Hoosic river relocation and control project. Site of this Corps of Engineers project is the river basin at North Adams, Mass.

The Hoosic drains a large part of the Berkshire Mountains in northwest Massachusetts where, in the last 30 years, flood waters have caused nearly $6,000,000 damage. Relocation of the river at some points, plus the building of new flood-control structures in the area of North Adams and Braytonville, will greatly reduce the hazard.

Travels 100 mi. in a day

On this Hoosic project, dozing, stockpiling, and push-loading assignments are scattered over a wide area. To handle these many jobs economically, Petricca's fast-moving LeTourneau-Westinghouse Tournatractor® frequently covers 100 mi. in a day of operation.

Part of the time, the "C" push-loads a 20-yd. tractor-towed scraper. Loading time averages 48 sec., in a distance of 150'. Other jobs include dozing debris, moving tree stumps, and shaping banks and slopes.

"Faster than other big tractors"

Ten years' profitable ownership of a Model C2 Tournadozer led Petricca to buy the new C Tournatractor. The older, rubber-tired "C" had demonstrated its complete mobility on job-to-job moves. This was a major factor in Owner Basilio Petricca's decision to buy a new, improved Tournatractor.

"The Tournatractor is handy," said Mr. Petricca, "well-suited for most construction work. What I like most about it is the fact it moves around so much faster than any other big tractor.. If I get a rush job, I can send it from here to there on short notice. It gets the job done fast, too.

"We use our Tournatractor to doze, fine-grade, push-load scrapers, feed gravel to a crusher at our pit. We can do just about everything with it."

Less trouble . . . more profit

Before you buy your next tractor, get all the facts on mobile, rubber-tired Tournatractor. Find out why this 17 mph construction worker does a wide-range of heavy tractor work — frees you from dependence on trailers and loading crews—raises your profit margin. CT-1702-DCJ-1

A 20-yd. towed scraper is push-loaded to heaped capacity by Petricca's Tournatractor in 48 sec. This is one of many varied jobs handled by the mobile, rubber-tired machine. It often covers 100 mi. in a work day.

Operator Russ Parks likes the electric-controlled down-pressure action available on Tournatractor blade for dozing gravelly loam. Wide-base tires give tractor added traction and mobility — reduce roading shocks to machine and operator.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 249

(Continued from preceding page)

A machinist dresses off the outer edge of the main impeller used by the dustpan dredge that is owned and operated by the Corps.

equipped to handle anything from the giant impeller of a dredge pump to a tiny valve stem of a gasoline engine. The large, well lighted shop contains lathes, drill presses, milling machines, and many other pieces of equipment necessary for a wide variety of jobs.

The facilities also include a well equipped radio shop that handles a big job. It must keep in repair all radio, sonar, radar, and TV underwater equipment used by the Corps in the district. Since much of the radio repair work has to be done in the field, five service trucks are kept on the move to the widely scattered jobs.

The radio shop is also a small communications center. It is in contact with all offices, the floating plant, and some 100 vehicles throughout the district. Contact is made by voice or code radio, and sometimes by both. The communications setup is particularly useful when floating units have to contact the shops for emergency repairs.

Barge-mounted shops

Shops on the string of barges at the river's edge are located conveniently for boat servicing. A small-boat repair barge permits a boat to float into the open end of the covered barge and then be picked up by an overhead hoist.

Other facilities on the barges include a carpenter shop, a paint shop, and a pipe and welding shop. All of the shops are enclosed by wood frame buildings.

Another barge carries a 25-ton derrick with a 60-foot boom. The derrick is operated by steam and equipped with a Clyde 3-drum hoist. A Brown steam locomotive crane, operating on tracks on centrally located barges, is used for moving heavy equipment. To raise boats of up to 500 tons out of the water for repairs, there is a floating dry dock.

Safety program

In the maintenance area, the Corps maintains an active safety program. The success of the program is evident from a large sign, set up outside the buildings, which shows the number of days that have passed without a disabling accident. As of the beginning of this year, the figure was 1142 days.

This creditable record was not gained without considerable time and effort spent on the safety program. Since much of the work is done on the barges, special safety precautions have to be taken. The barges are serviced by a fire-hydrant system that takes water both from the river and from city lines. A fireboat, on duty 24 hours a day, is tied up alongside the barges. Fire drills are held once a month to check the equipment and to make sure the men are well trained in their assignments.

Life jackets are required for all men working on floating equipment. Frequently, the superintendent holds man-overboard drills.

When necessary, printed signs are used to remind power-equipment operators of special safety precautions that should be observed. A sign over the De Walt bench saw in the carpenter shop reads: "Notice! Stop machine before making adjustments". In one of the shops there is a projector that shoots safety slides on a screen. The slides, rotated automatically, illustrate good safety practices. Special courses in first aid and safety for river-boat work are available to all personnel.

Radio speeds repair work

Since the repair shops are in radio contact with all floating plants, as well as 100 vehicles, a detailed report is received a few minutes after a breakdown occurs. A mechanic, after

Fabricators of Prestressed Concrete:

American-Marietta Co.
Hodgkins, Illinois

Material Service Co.
Algonquin, Illinois

Midwest Prestressed Concrete Co.
Rochelle, Illinois

Consumers Co.
McCook, Illinois

On the Illinois Toll Highway, now under construction, 219 of a total of 265 bridges use prestressed concrete girders. This represents a total of 6,872 prestressed girders varying in length from 40 to 90 ft. . . . Being used in all of the 219 bridges are SUPERIOR "HOLD DOWNS" for restraining the cables in the girders now being produced by the fabricators listed above.

SUPERIOR Form Ties, Hangers, Screed Supports, and "Hold Downs" Speed Construction....

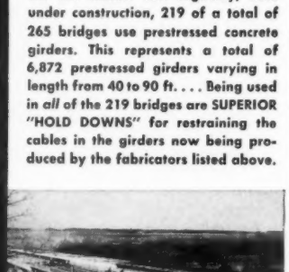
Whether it's Form Hangers for deck work, Coil Ties for retaining walls, heavy-duty Screed Supports for use with heavy screeding equipment, or "Hold Downs" in prestressed beams, you'll find SUPERIOR accessories on the job to help speed the Illinois Toll Highway program in northern Illinois.

With increasingly keen competition for this type of work, contractors have discovered that the efficient forming methods of SUPERIOR accessories offer all-important bidding advantages.

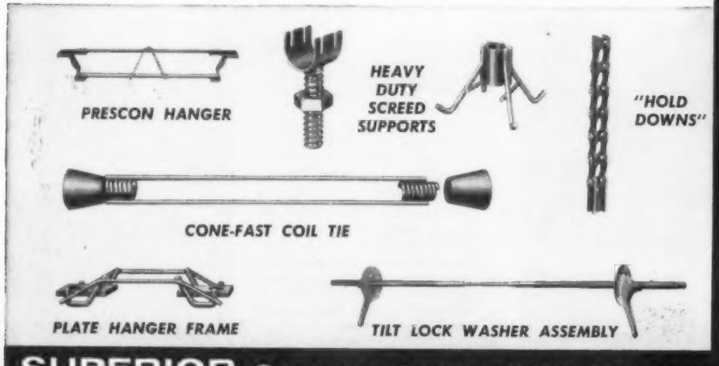
Whenever you are planning any type of form work . . . Superior's experienced engineering service is available to prepare form layouts, estimates and quotations. This comprehensive service is offered without charge.

A new 6 PAGE BULLETIN is available—Describes the SUPERIOR items for use in form work for bridges and allied projects.

Photo Credits—Illinois Toll Highway Comm.



FOX RIVER BRIDGE near Elgin, Ill. Photo shows progress of work by Arcole-Midwest Co., using SUPERIOR products.



OVERPASS and BRIDGE CONSTRUCTION progressing close to schedule—Entire system is slated for completion Dec. 31, 1958, although some portions will open this summer.

SUPERIOR Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill. (A Suburb of Chicago)

NEW YORK OFFICE
1775 Broadway, N.Y. 19, N.Y.

HOUSTON OFFICE
4101 San Jacinto, Houston 4, Tex.

PACIFIC COAST PLANT
2100 Williams St., San Leandro, Calif.

For more facts, use Request Card at page 18 and circle No. 250

picking up the necessary spare parts from the stockroom, heads out for the breakdown by either truck or boat.

During the construction season, the maintenance force consists of about 80 mechanics, helpers, laborers, supervisors, and a six-man office force. This number is augmented by experienced personnel from the construction units during the "lay-up" period when the river is too high for work to continue. During this lay-up period, all of the units undergo annual repairs so that they are in top shape for the next working season.

Personnel

Col. Milton P. Barschdorf is the district engineer for the Vicksburg District. The chief of operations is W. R. Harrison. The men who are directly responsible for the supervision of the maintenance facilities are T. E. Peters, plant engineer; J. M. Watt, superintendent of the repair shop; and Fred L. Ford, engineer in charge of radio repair and communications.

THE END

New office for subsidiary of Ford, Bacon & Davis

Ford, Bacon & Davis Construction Corp., subsidiary of the New York City engineering firm of Ford, Bacon & Davis, Inc., has moved into a new office building in Monroe, La., from which it directs engineering design and construction jobs throughout the United States and Canada. The one-story structure, located on a seven-acre plot, contains 14,900 square feet of floor space.

The building has a raised reinforced-concrete floor slab, with a crawl space underneath for wiring, conduits, piping, and plumbing. Because the roof is supported by concrete-filled pipe columns, neither interior nor exterior walls are load bearing.

Both front and rear walls are screened with 8×8×12-inch units of clay solar screen tile placed three feet in front of curtain walls of aluminum and glass. The solar screen tiles admit natural light, but deflect direct sun rays so that neither drapes nor blinds are needed.

New plant to be built by American Cyanamid

American Cyanamid Co., New York, N. Y., will begin construction this summer on a new multimillion-dollar maleic anhydride manufacturing plant at Bridgeville, Pa. The new unit, an outdoor type of installation, will cover approximately two acres of land adjacent to the company's present production facilities. The building will be incorporated into the operations of the Plastics and Resins Division.

The project is under the supervision of the firm's Engineering and Construction Division, which has engaged Scientific Design Co., Inc., New York, N. Y., to design and construct the new facilities. The plant is scheduled to be completed some time late next year.

The relation of traffic to highway design

The Highway Research Board's Bulletin 170, "Traffic Behavior as Related to Several Highway Design Features", contains four papers, the first of which correlates design factors and operational characteristics of the Gulf Freeway in Houston, Texas, and the Central Expressway in Dallas.

The second paper reports the results of vehicle speed and placement surveys in Texas on 2-lane rural highways, rural bridges, and an urban grade-separation structure with and without an obstruction on the narrow shoulder. The last two papers report on a New Jersey study of the frequency and character of use of shoulders along state highways; and on a cooperative study by the Bureau of Public Roads and nine Western states of driver behavior as related to shoulder type and width on 2-lane rural highways.

Graphs, diagrams, and tables supplement the text. The $1.60 bulletin may be had from the HRB, 2101 Constitution Ave., Washington 25, D. C.

AGC opens new building in nation's capitol

The new national headquarters of The Associated General Contractors of America, Inc., is now located at 20th and E Streets N. W., Washington, D. C. The three-story building contains 19,000 square feet of office space and is occupied exclusively by the association.

The Joseph F. Nebel Co., Washington, was the contractor. Cost of the building and land was approximately $762,000.

How Tomei Constr. Co.

moves 5 yds. per minute grading homesites

in Sierra Madre foothills

Tomei Construction Company of Van Nuys, California, contracted to carve hillside homesites out of the foothills of the Sierra Madre Mountains, near Arcadia. The job consisted of moving 800,000 yds. of dirt to step-terrace the side of the hills . . . leveling "pads" for homesites on the terraces . . . and building streets to make the hillside homes accessible.

Chooses 'Pulls* to do job

Step-terracing these hills called for working on steep grades, ranging to 22%, and hauling over uneven footings in very narrow quarters. To handle this assignment, Contractor Tomei chose 3 LeTourneau-Westinghouse 18-yd. Fullpak* scrapers with C Tournapulls®.

To begin each terrace, Tomei first pioneered a ledge with a dozer . . . then brought in his low, wide 18-yd. C Fullpaks. On the terrace, 'Pulls demonstrated their ability to work efficiently and safely in hilly, confined areas. Their quick, positive electric controls, and geared kingpin steer, helped operators maneuver the big units with ease from cut to fill . . . moving big yardages fast. With low center of gravity, and 40° oscillating pivot around kingpin, "C's" gave excellent stability on the steep, rough grades . . . permitting safe work at higher speeds, for profitable production.

3 Fullpaks move 5,000 yds. per day

In spite of adverse working conditions, the three 18-yd. C Fullpaks set a fast pace, averaging 5,000 yds. per 9-hr. day. Easy-loading Fullpaks, equipped with sideboards, were push-loaded with 15 yds. of granite dirt, sand, and rocks, within 62′ in about 40 seconds. "C's" hauled 552′ . . . spread in smooth, thin layers . . . and returned to the borrow area to complete 1239′ cycle in an average of 3 min.

'Pulls help compact fill

A high degree of compaction was specified on this job, and Tournapulls' big, low-pressure tires rolling over the fill proved a great advantage. After loads were spread, a tractor-drawn L-W sheep's foot roller was able to reach 90% compaction in only 3 passes.

"They're really dirtmovers"

Pleased with the performance of his 'Pulls, and with their good production record, owner Julis Tomei says, "They're the best machines for this type of work. All I can say is, they're really dirtmovers."

Fullpak has proved to be a money-maker for contractors all over the world. It will pay you to get all the facts. Ask for full specifications.

*Trademark CP-1532-DC-1

C Fullpak heaps 15 yds. of granite dirt over 62′ in 40 sec., carving out hillside homesites in California. The job was prime contracted by Camden Wilshire Co., Beverly Hills . . . Engineering by Tegart Engineers, Los Angeles.

Spreading its load in thin, even layers . . . and compacting as it travels . . . C Fullpak helps achieve high compaction specified.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 251

The top brass at Bay Cities Equipment makes it a policy to modify and adapt equipment to fit the customer's needs. Here a Cedarapids Master Tandem crushing and screening plant is fitted with a swiveling delivery conveyor. A Lincoln welder is used for the job.

Distributor doings

Dealer's service policies make business leap in dollar volume

Adapting and modifying basic pieces of equipment to fit the exact needs of the user is one of the best-known management policies of Bay Cities Equipment, Inc., and one that has catapulted the firm into the position of a leading equipment distributor. Today Bay Cities, top ranking among West Coast distributors in dollar-volume of business, serves customers through 18 field units, two complete shops, and parts and show facilities.

With headquarters in Oakland and a branch in San Jose, this distributor represents International Harvester and a number of other major lines in seven counties of the fast-growing San Francisco Bay area of California. The area, containing more than three million people, is experiencing a phenomenal population growth and is a veritable hubbub of construction activity.

Tailored to fit needs

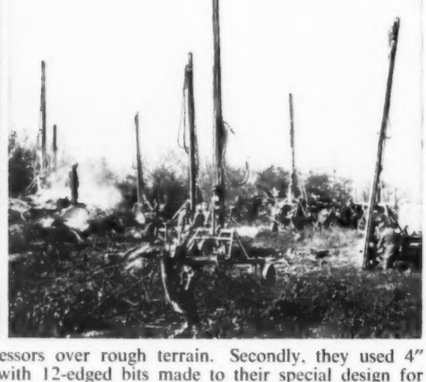
Many of the machines delivered to Bay Cities' customers have been specially tailored to fit the exact needs of the user. These modifications range all the way from the simple attachment of standard accessories to the manufacture of special pieces for specific jobs.

Not long ago, a pipeline contractor wanted a special tractor-mounted, completely self-contained drilling rig. Bay Cities' shops met the request with an International TD-24 tractor carrying an Ingersoll-Rand Gyro-Flo 600-cfm compressor on a special bracket on one side and three Ingersoll-Rand drills mounted on hydraulic booms on the other side. All of the controls were brought to the operator's seat, so that one man at the controls could position and operate all three drills and the tractor. The side-mounting arrangement permitted the tractor to travel along the pipeline service road while drilling the pipeline trench.

Bay Cities' basic lines include the International industrial line, Hough Payloaders, Unit cranes and shovels, Gorman-Rupp pumps, Ingersoll-Rand compressors and air tools, Galion rollers and graders, Hendrix buckets, and Wisconsin engines, in the Bay area. For two other lines—Cedarapids crushers, asphalt plants, and conveyors, and Baldwin-Lima-Hamilton shovels and cranes—the franchises include all of Northern California from Fresno north.

Although this organization has

1565 CFM OF 110 LB. AIR FOR BRIDGE CLEANING: Runnels Industries used these 3 Jaeger rotary compressors (two 600's and a 365), connected to a 3" air line, to supply twelve 5/16" sandblasting nozzles spread out over a mile along Tacoma Narrows Bridge, Washington. They operated 10 hours a day at 110 lbs. pressure. Under such full loads, the 100-150 rpm slower speed of Jaeger compressors saves fuel and wear and tear on engines every day you work.



3 COST-SAVING IDEAS ON ONE JOB: This job, by Rambore, Inc., drilling specialists, was 280,000 cu. yds. of rock, mostly granite, in depths to 40', on Massachusetts' Southeast Expressway. One of their good ideas was to hook up their drills and compressors through 1500' of easily portable 5" aluminum pipe. This saved frequent moving of compressors over rough terrain. Secondly, they used 4" drills with 12-edged bits made to their special design for hard rock. Their third good idea was to power these 7 drills with 3 Jaeger Model 600 compressors, which deliver the same air at 1650 rpm that others produce at 1800 rpm, at a very substantial saving in fuel.

Using the same engine, Jaeger gives you 600 cfm of air at 150 rpm slower speed

You buy few items of equipment in which the superiority is so easily measured as in a Jaeger rotary compressor. For example: There are six 600 cfm rotary compressors on the market powered with the same GM 6-71 diesel engine. Five of these operate at 1800 rpm to produce rated volume. The sixth, the Jaeger, delivers the same volume at only 1650 rpm.

In one 8-hour shift this difference amounts to miles less engine piston travel, as much as 72,000 fewer compressor revolutions and a substantial saving of fuel. Jaeger 125, 250 and 365 cfm units, with 1700 rpm full load speed, are comparably efficient.

This explains why Jaeger users enjoy such low engine maintenance costs, and why many Jaeger rotaries have logged more than 8000 hours without a single vane replacement. Ask your Jaeger distributor for full data and demonstration . . . or send for Catalog.

THE JAEGER MACHINE COMPANY
701 Dublin Avenue, Columbus 16, Ohio
Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario
For more facts, use Request Card at page 18 and circle No. 252

The Oakland, Calif., headquarters of Bay Cities Equipment, Inc., serves customers through 18 field units, complete shops, and parts and show facilities. Good service has made the company one of the leading West Coast distributors.

ay Cities Equipment tailors machines
o fit the users' specifications;
ully equipped field trucks overhaul rigs
n job and in customers' shops

been serving contractors in the area for more than 10 years, its real expansion began about three years ago when the firm acquired the International and other major lines.

One effect of the expansion has been that the firm has now attained national recognition as one of the largest distributors of portable air compressors.

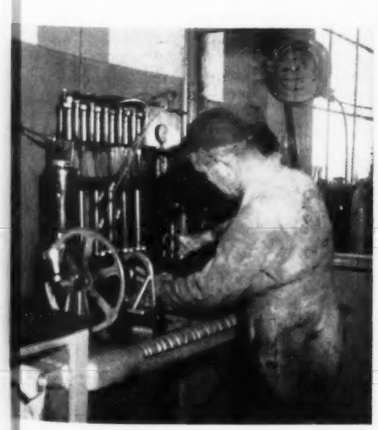
Complete facilities

At both locations, complete facilities are maintained to serve the construction industry and other fields. Both shops are well equipped and manned to provide all types of maintenance and overhaul service for customers and to recondition used machinery.

The Oakland shop has a specially equipped room for the overhaul and checking of fuel-injection systems, an engine shop with equipment for torque-testing engines and a number of machine tools, and a section set aside for the maintenance and repair of air tools. A two-ton overhead crane handles engines and other heavy parts in the disassembly and reassembly of machines.

Parts needed to service the machines in each area are maintained in ample supply in both locations. Since the branch location also handles farm equipment, parts for the smaller type of machines make up a large part of the inventory. Heavy parts for crushers and big tractors are kept in the main stockroom. By using partially

(Continued on next page)



In this specially equipped room, diesel fuel injection pumps and nozzles are tested and repaired. The setup in front of the workman simulates the operation of a diesel engine for checking pumps and other parts.

Accept this

L-W

CHALLENGE

... to UP your

PROFIT MARGIN

Yes ... prove to me that L-W 440 Adams motor grader does more work in a day, at less cost, than any other grader in its 115 hp class. Call me at ..... (number) on or about ..... (date) to arrange for a demonstration.

Name ..... Position .....

Company .....

Address .....

City ..... State .....

(Fill out and mail to your LeTourneau-Westinghouse Distributor)

Let us prove to you that

L-W 440 Adams† Grader does more work ... at less cost than any other grader in the 115 hp class

There's only one way to buy a motor grader, and that is on the basis of performance! We know ... from competitive tests, and from owner reports ... that the L-W 440 Adams Model motor grader will out-perform any other grader in its class. We'd like to prove it to you!

This improved machine, with choice of GM or Cummins diesel engine, constant-mesh transmission, 8 forward speeds to 25 mph, 4 reverse speeds to 13 mph, 3 optional creeper speeds, balanced weight distribution for "bull-dog" traction, and the best blade control available ... will serve you longer, do more work, at *less cost* than 115 hp graders of any other make.

The "440" can UP your profits. Let us show you this machine in action. Fill out and mail the above "request for demonstration" to your LeTourneau-Westinghouse Distributor.

†Trademark G-1940-DC-1

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use coupon, or Request Card at page 18 and circle No. 253

◄ A typical field truck is this International S-130 fitted with a Powers Servicemaster body and equipped with a demountable A-frame boom and Budgit hoist for handling heavy lifts.

Heavy parts for crushers and big tractors are stocked by this Oakland home office; the San Jose branch carries a large inventory of parts for small machines and farm equipment. ►

distributor doings

(Continued from preceding page)

completed freeways, it takes a driver only about an hour to get from one location to the other. With the completion of the freeways in a few years, the two shops will be within 40 minutes' driving time of each other.

New and used equipment is displayed for sale in showrooms and outdoor areas. Most of the equipment is displayed in the showrooms with the exception of the big International Payhaulers, Lima and Unit cranes, and the big crushers, which are parked on outdoor lots. The main building and the branch location each have about 30,000 square feet of floor space, together with several acres of outdoor space.

Field service trucks

While a good part of the overhaul work is done in the shops, most of the customer service work and some complete overhauls are made on the job or in the customers' shops. To handle this phase of the work, Bay Cities operates 18 service trucks, each fully equipped and manned by a skilled mechanic.

A typical rig in this service fleet is an International S-130 pickup truck fitted with a Powers Servicemaster body. The regular equipment on this rig includes a demountable A-frame carrying a Budgit hoist to handle the heavy lifts. In addition to a full stock of the common tools, each truck carries an oxyacetylene welding rig, hydraulic jacks, pullers, and the like, and a complete set of service manuals and parts books. Additional special tools are taken from the shop to handle special jobs.

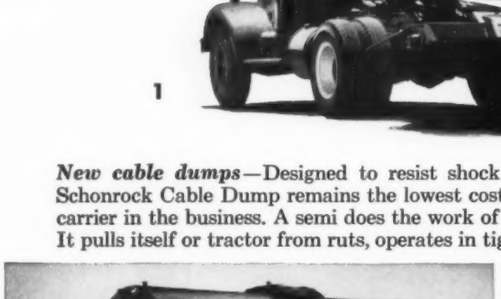
The field serviceman operating one of these rigs specializes in Cedarapids crusher and asphalt plant repairs. Two of the men are compressor and air tool specialists. One man specializes in the delivery and servicing of new equipment. All are available upon short notice at the customer's call.

Bay Cities' main location is right on the Eastshore Freeway near the approaches to the Oakland-San Francisco Bay Bridge. This freeway has just recently been constructed as a three-level structure. Southbound traffic travels on five lanes of the top

All The Hauling Equipment You

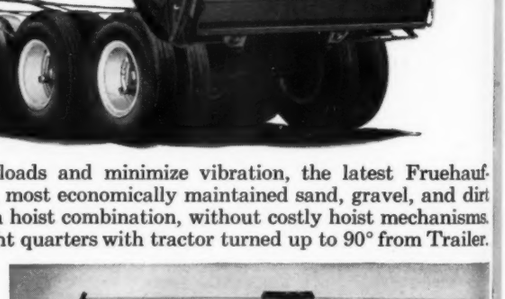
1

New cable dumps—Designed to resist shock loads and minimize vibration, the latest Fruehauf-Schonrock Cable Dump remains the lowest cost, most economically maintained sand, gravel, and dirt carrier in the business. A semi does the work of a hoist combination, without costly hoist mechanisms. It pulls itself or tractor from ruts, operates in tight quarters with tractor turned up to 90° from Trailer.



3

Aluminum hot commodity tanks—8700 pounds complete is the light, light weight of an all aluminum 6400 gallon Fruehauf asphalt tank insulated and equipped for 400° temperatures. Exclusive Fruehauf automatic welding processes are typical of the advanced, unmatched quality of Fruehauf tanks.

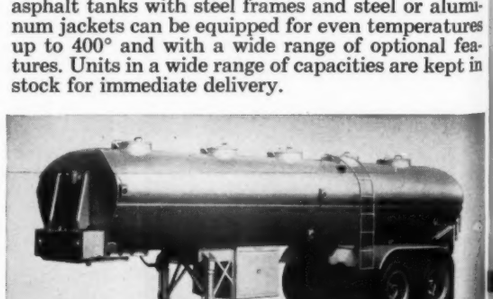


4

Steel hot commodity tanks—Fully insulated hot asphalt tanks with steel frames and steel or aluminum jackets can be equipped for even temperatures up to 400° and with a wide range of optional features. Units in a wide range of capacities are kept in stock for immediate delivery.

5

Airslide* bulk cement tanks—Fruehauf Airslide units are adaptable to both semi and train operation. Initial cost and maintenance are low because of the mechanical simplicity. Gravity does most of the discharge work with the aid of air blown through angled fabric panels. *(*Airslide—Trademark, Fuller Co.)*



6

Screw type bulk cement tanks—Up to 10% *extra* bulk cement can be hauled in Fruehauf's new "Twin and a half" screw-type Bulk Cement Trailer because of its drop-frame construction. Discharge is rapid, cost and upkeep economical, because material is moved by twin front screws and a single rear screw.

deck, while local traffic uses the ground level. The opening of this freeway has done much to lessen traffic congestion in the area.

When both the north and south extensions of the freeway are completed, Bay Cities' location will be minutes closer to its customers up and down the Bay. With all of the through traffic traveling at second and third-floor levels, the company erected a new outdoor sign on the front of the building. The sign extends up high enough to be seen from upper levels of the viaduct.

An area under the viaduct between the divided roadway at the ground level was available for rental and has been leased by Bay Cities for storing new and used equipment and for parking automobiles.

Among its customers, Bay Cities Equipment, Inc., is proud to claim some of the West's large contractors including McCammon-Wunderlich Co., Fredrickson & Watson Construction Co., Ransome Co., Utah Construction Co., and Guy F. Atkinson Co.

Personnel

Heading the administrative staff of Bay Cities Equipment, Inc., are general manager R. A. King and sales manager I. H. Brown. The San Jose branch is managed by Harold Close. Others on the staff are parts manager E. J. McGettigan, service manager Lowell Scott, and credit manager Jack Gessini. The firm employs about 150 people.

THE END

Clark Industries division appoints 13 new dealers

Clark Industries, Construction Equipment Division, Columbus, Ohio, has appointed 13 new dealers to handle the Clark line of Wedge-Lok paving forms, and bins and batching equipment. Knox-Tenn Equipment Co., Knoxville, and Equipment Rental & Sales Co., Chattanooga, are the exclusive dealers for the eastern part of Tennessee; Tri-State Equipment Co., Inc., Memphis, covers the western part of the state.

The exclusive dealer for the Province of Quebec, Canada, is Blackwood Hodge Equipment, Ltd., Montreal. Clark Equipment Co., Little Rock, Ark.; Joe Money Machinery Co., Inc., Birmingham and Montgomery, Ala.; Mine & Smelter Supply Co., Denver, Colo.; and Virgil Heck Equipment Co., Louisville, Ky., will cover their respective states.

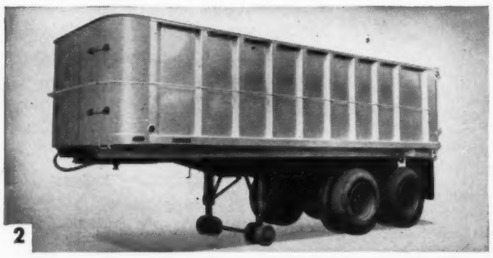
Star Machinery Co., Seattle, Wash., will serve the western part of the state; The Alamo Iron Works, San Antonio, Corpus Christi, Brownsville, and San Angelo, Texas, will cover those respective areas; and F & H Equipment Co., Shreveport, La., will handle the northern portion of the state. Equipment, Inc., Jackson, Miss., will serve the southern part of the state; and General Supply & Equipment Co., Baltimore, will cover all of Maryland, as well as Kent and Sussex counties in Delaware and Morgan, Berkeley, and Jefferson counties in West Virginia.

Need For Any Construction Job!

The Trailers designed for the biggest payloads are all Fruehaufs

7

New lightweight platforms—Lighter by up to 1200 pounds than previous steel platforms, the new heavy duty Fruehauf Workhorse utilizes 19½" deep steel I beams as direct supporting members for lift trucks and loads, has full width I beam cross-members for added structural strength.

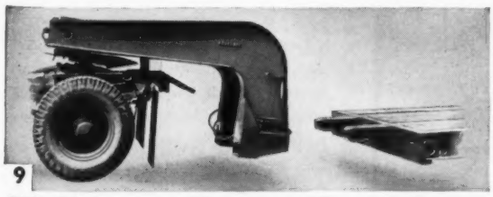


2

New hoist dumps—Front-mounted hydraulic telescopic hoist dumps are designed by Fruehauf in capacities up to 13 cubic yards of sand or gravel, 25 of rock. Tandem units feature the "no-hop" P2 underconstruction, deep I beam frame members, 21′, 22′, 24′, and 26′ bodies, several chassis lengths, and ICC lights.

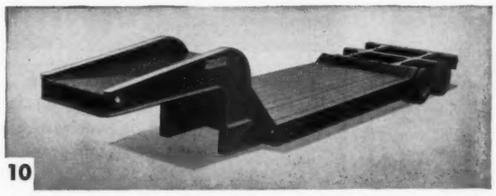
8

Low cost multi-purpose platforms—Quality features at low, low prices distinguish this husky, all purpose flat bed, which is ideal for hauling heavy builders' materials, light machinery, and bulky installations. Single and tandem axle units are available, from 27′ to 42′ long.



9

Winchless removable gooseneck carryalls—No hydraulic assists or winches are required on these Fruehauf carryalls in capacities up to 50 tons! Front end loading and unloading of huge shovels is reduced to minutes, and coupling or uncoupling is easily handled by a driver, without shock to loads.



10

Single and double drop carryalls—Fruehauf builds the world's huskiest line of carryalls of all types in a full range of capacities. Single and double drop units for loads of 25 to 75 tons are always ready for quick delivery and specials for larger tonnages are designed to your specifications.

A Full Line Of Moneymaking Fruehauf Construction Trailers— One For Every Kind Of Job—Ready For Immediate Delivery When Needed!

FRUEHAUF TRAILERS

World's Largest Builder of Truck-Trailers
FRUEHAUF TRAILER COMPANY
10949 Harper Avenue • Detroit 32, Michigan
PLEASE SEND FURTHER DETAILS ON FRUEHAUF CONSTRUCTION UNITS CIRCLED:
1 2 3 4 5 6 7 8 9 10

NAME_____
COMPANY_____
ADDRESS_____
CITY_____ STATE_____

For more facts, use coupon, or Request Card at page 18 and circle No. 254

Yale & Towne names five

The Yale & Towne Mfg. Co., Batavia, N. Y., has appointed four new distributors for its Trojan line of tractor shovels. Korte Bros., Inc., 335 Murray at Lafayette St., Fort Wayne, and 23134 Lincoln Highway West, South Bend, Ind., covers northern Indiana; and Hawkins Equipment Co., 1475 Thomas St., Memphis, Tenn., services the western third of Tennessee.

Ingram-Houston, Inc., 6650 Mykawa Road, Houston, Texas, supplies east-central Texas; and Construction Service Equipment Co., 21st and Pacific Streets, Omaha, and 10th and Vine Streets, North Platte, Nebr., is Trojan distributor for the state of Nebraska and nine bordering counties in western Iowa.

Coast Associates, Inc., Seattle, Wash., has been appointed a franchise sales and service representative for the line of industrial lift trucks produced by the Materials Handling Division of The Yale & Towne Mfg. Co., Philadelphia, Pa. Located at 1961 Fourth Ave. S., the dealer will cover 17 counties in western Washington, and Alaska.

William G. Hathaway is general manager of Coast Associates.

West Virginia dealer for Cleveland Trencher

West Virginia Tractor & Equipment Co., 1701 Mercer Ave., Charleston, W. Va., has been appointed a distributor for the complete line of trenchers, side cranes, backfillers, and tampers manufactured by The Cleveland Trencher Co., Cleveland, Ohio. The dealer and its branch office at 100 Wood St., Clarksburg, will handle sales, parts, and service of the equipment for the entire state.

Huber-Warco appoints four distributors

The Huber-Warco Co., Marion, Ohio, has appointed new dealers to handle its line of motor graders, maintainers, tandem rollers, and 3-wheel rollers. The new dealers are: the Berry Bros. Machinery Co., 2516 Shiloh Road, Dallas, Texas, handling the northeastern Texas area; Contractors Equipment Co., Inc., 163 Maple St., Decatur, Ga., covering the

distributor doings

greater part of Georgia; and the Moody Equipment & Supply Co., 8820 New Benton Highway, Little Rock, Ark., handling the line in all but ten eastern Arkansas counties.

H-W has also named Construction Equipment Inc., 1915 Washington St. W., Charleston, W. Va., to cover West Virginia, with the exception of a few counties in the northern panhandle.

This year the Pennsylvania Turnpike had no fatalities for the fifth consecutive Memorial Day weekend.

Three new distributors for Buffalo-Springfield

Central Ohio Tractor Co., Columbus, Ohio, has been appointed a dealer by the Buffalo-Springfield Roller Co., Division of Koehring Co., Springfield, Ohio. The new dealer, which has a branch in New Philadelphia, Ohio, will offer complete parts and service facilities for Buffalo-Springfield's entire line of rollers and compaction equipment. The dealer will cover the central and southeastern parts of the state.

The Texas Machinery & Equipment Co., Inc., Amarillo, will handle the complete Buffalo-Springfield line for 80 counties in West Texas. The dealer has branches in Abilene and Lubbock.

Llewellyn Machinery Corp., Miami, Fla., has been named to handle Buffalo-Springfield's complete line in Florida's 11 southernmost counties.

Garrett supply outlets named by U. S. Rubber

All industrial supply outlets of The Garrett Corp., Los Angeles, Calif., have been named distributors for U. S. Rubber products. The newly acquired line, that features Power Grip Timing belt drives, V, flat, and conveyor belts, and industrial-type hoses, is carried by the Garrett Supply Division, Los Angeles and Phoenix; and C. W. Marwedel, a subsidiary located in San Francisco and San Jose, Calif.

Koehring affiliates name new dealers

The Koehring Division of Koehring Co., Milwaukee, Wis., and Parsons Co., Newton, Iowa, have appointed The Pelican Machinery Co., Inc., 7300 Washington Ave., New Orleans, La., as their sales and service representative. The dealer's territory for the two companies covers the southern portion of Louisiana. Pelican handles Koehring's full line of heavy-duty construction machinery and the Parsons line of Trenchliners.

George M. Philpott Co., 1060 Bryant St., San Francisco, Calif., has been appointed a distributor for the sales and service of products of the Koehring Division, Koehring Co., Milwaukee, Wis. The dealer's territory consists of 24 California counties; that portion of Contra Costa County west of Fairfield, Calif.; and that part of Sierra, Nevada, Placer, and Eldorado counties located east of the Sierra range.

Dorsey presents awards

Distributor awards for 1957 were presented at the annual convention of Dorsey Trailers, Inc., Elba, Ala. Leading distributor of the year was Harris Truck & Trailer Sales, Cape Girardeau, Mo. Other winners were Blewett-Hanson Trailer Sales, Minneapolis, Minn.; Felts Trailer & Equipment Co., Dothan, Ala.; Johnson Trailer & Equipment Co., Macon, Ga.; Koch Motor Sales, Chillicothe, Ill.; Matlock and Cope, Nashville; and Orlando White Trucks, Orlando, Fla.

Hunter Machinery news

The Hunter Tractor & Machinery Co., Inc., Milwaukee, Wis., has changed its name to the Hunter Machinery Co., Inc. The company is a non-tractor dealer, selling every type of construction machinery except tractors, motor graders, scrapers, etc.

Dealer opens Idaho branch

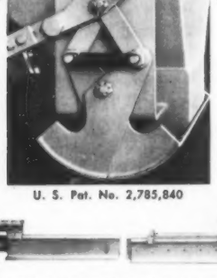
Lang Construction Equipment Co., Salt Lake City, Utah, has opened a branch office in Idaho Falls, Idaho, to cover the southeastern part of the state. Lang Construction distributes the line of crushing, screening, and conveying machinery manufactured by Lippmann Engineering Works, Inc., Milwaukee, Wis.

Clark names distributors

Western Machinery Co., N. 808 Division St., Spokane, Wash., has been appointed to sell and service Michigan tractor shovels, tractor dozers, tractor scrapers, and excavator cranes, products of the Construction Machinery Division of Clark Equipment Co., Benton Harbor, Mich. The distributor's territory in Idaho covers nine counties and Idaho County north of the Salmon River; and in the state of Washington, the counties east of and including Okanogan, Douglas, Grant, and Benton.

H. C. Ormes Construction Equip-

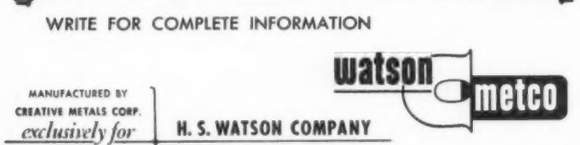
watson metco EQUIPMENT HELPS YOU BID COMPETITIVELY



U. S. Pat. No. 2,785,840

1 HOPPER GATE
The exclusive and patented double clam shell gate is used on all Cmetco hoppers and buckets. Fast opening, positive closing action prevents waste of material . . . special design gives maximum strength and minimum weight.

2 POWER BUGGY
Cmetco Power Buggy provides fast and heavy-duty concrete handling. No operator training required and simple, efficient design means easy maintenance. Travels 17 mph and shifts from forward to reverse in an instant.



3 TELESCOPING SCREED
Cmetco Telescoping Vibratory Screed reduces manhour costs and gives you better depth compaction. Ideal for highway, bridge, slab and floor work. Exclusive construction eliminates space restrictions and need for auxiliary beams.

WRITE FOR COMPLETE INFORMATION

watson metco

ROLA PAVERS • WOOD AND STEEL TILT-UP HARDWARE • BULL FLOATS • HOPPERS • BUCKETS ELEPHANT TRUNKS AND CHUTES • TAMPERS HAND CARTS • POWER BUGGIES • TELESCOPING AND ECONOMY VIBRATORY SCREEDS

MANUFACTURED BY CREATIVE METALS CORP. exclusively for H. S. WATSON COMPANY
1316 - 67th Street
EMERYVILLE, CALIFORNIA
TOLEDO, OHIO
WC-9

BETTER EQUIPMENT FOR PLACING AND FINISHING CONCRETE

For more facts, use Request Card at page 18 and circle No. 255

Look for FUNK'S REVERS-O-MATIC on New Equipment

One Lever DOES IT ALL
CONTROLS SPEED AND DIRECTION OF TRAVEL

- NO GEAR SHIFTING
- NO CLUTCH WORRY
- MORE WORK PER HOUR
- REDUCED MAINTENANCE

FUNK revers-o-matic DRIVES

Other Funk Products

Funk Torque Converter

Funk Right Angle Drive

HYDRAULIC CONTROLLED REVERSING CLUTCH with TORQUE CONVERTER

Look for FUNK'S REVERS-O-MATIC in any moving equipment you buy. Speed and direction of travel — forward and reverse or lift and lower — can be easily controlled by ONE LEVER or foot pedals. Torque converter prevents stall, eliminates shock and multiplies engine torque more than 200% to broaden h.p. range. Insist on FUNK equipped machines.

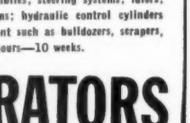
FUNK MFG. CO. BOX 577-B COFFEYVILLE, KANSAS

For more facts, circle No. 256

Attention CONTRACTORS

train your heavy equipment Mechanics and Operators at Greer

MECHANICS training



Complete mechanics training of diesel engine transmissions; torque converters; fuel injection systems; track assemblies; final drive assemblies; steering systems; idlers; rollers; power transfer systems; cable control systems; hydraulic control cylinders & welding pertaining to heavy earth moving equipment such as bulldozers, scrapers, loaders, off highway trucks, etc. Course time—540 hours—10 weeks.

OPERATORS training

Course teaches road building, land clearing, grading, excavating on crawler tractors, front end loaders and scrapers, etc., including preventive maintenance. 200 hours—4 weeks. Motor graders and compactors, including preventive maintenance. 200 hours—4 weeks. Backhoe and dragline, including preventive maintenance. 200 hours—4 weeks.

SPECIAL WEEK-END TRAINING AVAILABLE
Write Mr. C. G. HUTCH

Greer TECHNICAL INSTITUTE
BOX 278, BRAIDWOOD, ILL.

For more facts, circle No. 257

ment Co., 5600 Wayzata Blvd., Minneapolis, Minn., has been appointed to sell and service the Michigan line of machinery in the southern half of Minnesota.

Kwik-Mix appoints two

Kwik-Mix Co., Division of Koehring Co., Port Washington, Wis., has appointed Frank Deluccia, 908, Route 2, North Plainfield, N. J., a distributor for its complete line of construction machinery in the counties of Monmouth, Ocean, Middlesex, Somerset, Union, and Essex. The Machinery & Supply Co., 2114 S. Alvernon Way, Tucson, has been named construction distributor in the state of Arizona for the company's Moto-Bug.

Washington, D. C., dealer opens Virginia office

S. L. Cooper Co., Washington, D. C., has opened a branch office in Roanoke, Va., the company's fourth in the state. Cooper Co. is a dealer for Yale & Towne Mfg. Co., Philadelphia, Pa. The new branch, located at 3204 Williamson Road N. W., will offer material-handling equipment in the southwestern part of the state.

A. O. Gribble is in charge of the new office.

LeT-WesCo appoints dealer

Jefferson City Diesel Sales & Service Co., Jefferson City, Mo., has been appointed a distributor for the complete line of earthmoving, hauling, and grading equipment manufactured by the LeTourneau-Westinghouse Co., Peoria, Ill. From headquarters at 713 Dix Road and Highway U. S. 50 West, the dealer will cover 23 counties in central Missouri.

Prime-Mover Co. appoints

The Prime-Mover Co., Muscatine, Iowa, manufacturer of powered carts and a fork-lift for handling concrete, masonry, and building supplies, has appointed R. J. Sedgwick district representative for California, Arizona, Utah, and Nevada. He has headquarters at 2822 Doolittle Ave., Arcadia, Calif.

Parker-Hannifin news

Sealtite Corp., 1925 Washington Ave., St. Louis, Mo., has been appointed a distributor for the Parker-Hannifin Corp., Cleveland, Ohio. The new dealer handles Parker tube and hose fittings, and tube-working tools.

Ruhr names two dealers

Ruhr Industries, Philadelphia, Pa., sole agents for the Americas for Hoesch Export G.m.b.H., West German manufacturers of construction machinery, has appointed Cate Equipment Co., Salt Lake City, Utah, and Service Supply Corp., Philadelphia, exclusive distributors for the complete line of Ruhr grapples. Cate services the entire state of Utah, Apache County in Arizona, and San Juan, McKinley, and Valencia counties in New Mexico. Service Supply covers the eastern half of Pennsylvania, the entire state of Delaware, and south New Jersey.

Carl E. Lind is sales manager.

AISC awards scholarships to 10 high school seniors

Ten scholarship winners have been named by the American Institute of Steel Construction, a national organization representing the fabricated structural steel industry. The high school seniors will receive $1,000 each toward their training for careers in architectural or civil engineering.

A total of 81 students, sponsored by 56 member companies of the AISC, competed in the nationwide contest.

Manual on welded steel in design of machines

"Aids to Efficient Machine Design in Welded Steel" is now available from The Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio. The $1 manual is for machine designers who wish to improve their machines through the efficient use of welded-steel design. The manual discusses simplified methods for redesigning cast bases and cast flywheels for lower costs; how to appraise steel designs for the lowest possible cost; and how to use steel efficiently for bending loads, to resist torsion, and to minimize vibration.

Also developed are simplified methods of designing a base and flywheels to load conditions; and how to design bearing supports, fillet welds for strength or for horizontal shear due to bending, and welds for bending or twisting.

A-W Tandem Roller compacting base for asphalt road at Dayton, Ohio. Owned by Earl D. Creager, Inc.

"Our A-W Tandem is doing an excellent job..."

—Earl D. Creager, Inc.

Earl D. Creager, Inc., is a general contracting firm in Dayton, Ohio, which does a considerable amount of road and highway construction work. The company owns about $1,000,000 worth of equipment, in 1956 grossed more than $3,000,000. In May 1957 it purchased a new A-W Tandem Roller.

Earl D. Creager, president, says: "We made our decision to buy an Austin-Western after looking the market over very carefully. Precision and dependability were our main concerns, and the A-W seemed to fill the bill best.

"Our operators tell us that the machine gives exceptionally smooth and steady performance. Also that its full visibility, convenient dual controls, and hydraulic steer make finish grading easy. All in all, we feel that our A-W Tandem is doing an excellent job and we are sure that we put our money into the right machine."

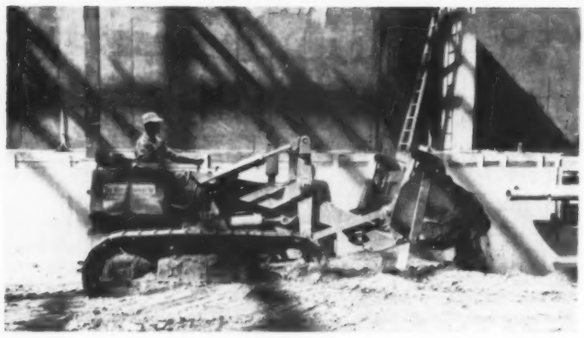
A-W rollers are available in these models: tandem (5 to 14 tons), portable tandem (3½ to 6 tons) and 3-wheel (8 to 14 tons). Get all the facts from your nearby A-W distributor or write to us.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 258



This Drott Four-in-one loader on an International TD-9 tractor is used to build a small ramp in the basement, so that it can pour the slab at the top of the low wall. The rig was kept busy carrying concrete and placing it in wall forms.

Remodeling, new construction make plant into new school

Reconversion work is started on fifth floor and carried down; big plate-girder lift made by cranes working on sloping ground

When Henry Ford built the Des Moines, Iowa, assembly plant in 1918, he never dreamed that 40 years later the plant would be turning out young technicians qualified to repair the Fords of '58.

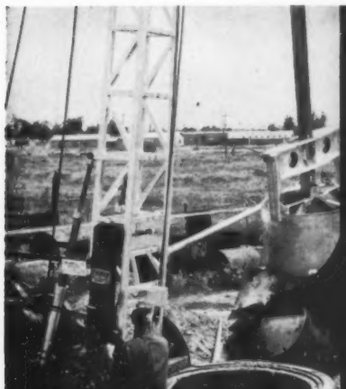
With the addition of a new auditorium and gymnasium, the former Model T plant has been converted into the modern Des Moines Technical School. Recently completed at a bargain price of about $4 million, the public school will soon provide a wide variety of technical training for up to 2,000 students.

Since the original five-story reinforced-concrete building was built to turn out Model T's and not students, many adjustments had to be made. These adjustments were done for a price of $2.4 million by The Weitz Co., Inc., engineering and contracting firm of Des Moines.

The contracts called for the entire building to be steam cleaned; installation of a new heating and air-conditioning system; erection of interior block walls; replacement of the old window sash with aluminum and, on the upper floors, steel sash; soundproofing of the ceilings; and a host of other items necessary to convert a reinforced-concrete shell into a modern school. A major part of the contract was the construction of the brick and steel-framed addition that houses a 2,000-seat auditorium, separate boys' and girls' gymnasiums, and a swimming pool.

The new addition, designed by architects Wetherell & Harrison, Des Moines, occupies most of the usable land on the street side of the building. In this position the new building shields the less pleasing architecture of the original plant. The buildings are located on the corner of West 18th St. and Grand Ave. in downtown Des Moines. Built under the supervision of the Des Moines Independent Community School District, the new school will replace the small Des Moines Technical High School.

The remodeling of the 453×120-foot plant tested the ingenuity of the contractor and at times demanded

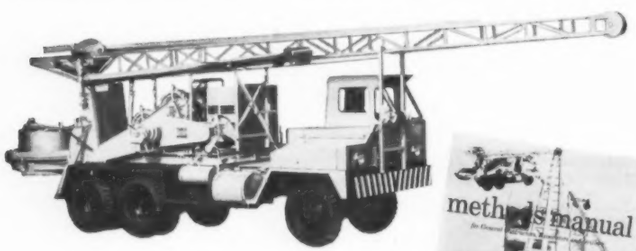


"Big Bore" Drilling for as little as 18¢ per foot

CALWELD HAS THE CAPACITY to do many excavating jobs. A big Calweld bucket type drill *digs fast*... down to a 45-foot depth in one hour. *It digs big*... holes up to 10 feet in diameter. *It digs deep*... down to 200 feet. *It digs with precision*... absolutely vertical holes to exact specification. *It takes a 1½ yard bite*... with each pass.

Take another look at the Calweld bucket type drills. They are big, fast and maneuverable—and they offer a new and more economical method of pre-boring for concrete piles, excavating for foundations, excavation shoring, manholes, cesspools, soil testing and hundreds of other jobs.

MOBILE AND MANEUVERABLE DRILLS 10" to 120" HOLES 200 FT. DEEP



New "Methods Manual for General Contractors and Excavators." A 16-page booklet filled with job facts and methods used in all types of construction jobs. Write for free copy.

CALWELD DRILLS

CALWELD, INC. 7222 E. Slauson Ave., Los Angeles 22, Calif.

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Wherever your job is—*whenever* you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—*when* and *where* you want it.

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Continental Suction Hose is recognized nationally by contractors for its superior quality—not an ordinary hose, but a hose built for rugged, dependable service. Sizes 1½" through 12", for water and/or sand suction. Send for catalog of HOSE and PROTECTIVE CLOTHING.

HOSE by **CONTINENTAL**

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A Scoopmobile, modified with a short boom, clears away steel members in the path of the beam lift. The rig proved very useful in handling smaller pieces of steel and in feeding the cranes.

An 89-foot 38-ton plate girder is raised into position to form the main support member for the balcony in the new auditorium. The lift is handled by a Link-Belt and a Lorain crane.

A steelworker atop the beam coordinates the lift by giving hand signals to the crane operators.

special construction techniques. Although the reinforced concrete of columns and floors was in surprisingly good condition, it was often a problem to make the new construction fit in with the old. In working new pipes and ductwork through the old floors, the men found out just how hard that old concrete was.

Reversing the usual construction methods, the superintendent started the remodeling work on the fifth floor and worked down. As the work proceeded, the finished floors were left undisturbed and free from construction traffic.

Reworking the old building offered some advantages. The loading docks and railroad spur at the rear of the plant provided good facilities for bringing in construction materials. The basement, on the same level as the loading docks, was a convenient place to store concrete blocks, acoustic tile, electrical fixtures, and other supplies.

By making use of the 4,200-pound-capacity freight elevators, the superintendent was able to keep a constant flow of materials moving from the basement to the upper levels. A Moto-Bug fork-lift was the key piece of equipment in this operation. The 1,500-pound fork-lift rode the elevator as it carried palletized materials to the bricklayers. The lightweight fork-lift also assisted in unloading trucks and keeping material moving through the building.

An economical method of soundproofing the classrooms was devised by applying the acoustic tile directly to the concrete ceiling. The electrical conduits, which were not concealed by the tile, were painted white to blend in with the ceiling.

New construction

Construction of the basement wall of the gymnasium posed an unusual problem. The west wall of the basement butted against the basement wall of an adjoining building. To add to the complications, the footings of the new wall had to be excavated

(Continued on next page)

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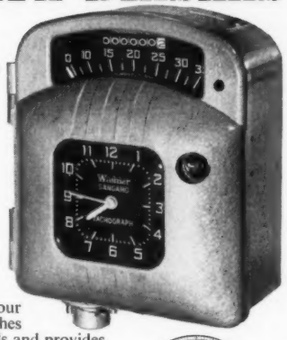
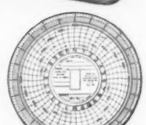
TACHOGRAPH

the recording tachometer



The Wagner-Sangamo RPM Tachograph keeps your drivers posted on engine speed at all times—flashes a warning signal to warn of excessive engine speeds and provides supervisors with an accurate charted record to check operator performance. Model BB Tachographs are available for 12 or 24 hour records and for 2500 or 3500 RPM maximum engine speeds. Find out NOW how a small investment in a Tachograph for every diesel you operate can pay big dividends by encouraging safer, more economical driving. Mail the coupon below.



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For more facts, use coupon, or Request Card at page 18 and circle No. 261

Hard to reach places are easy for...

the powerful *Viberette*

in prestress work in narrow forms

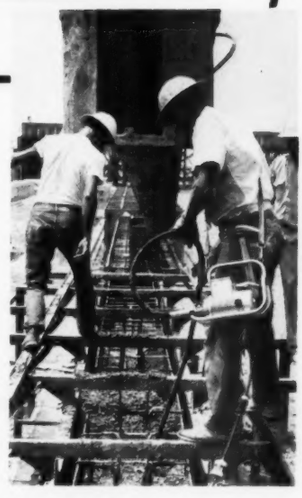
Hard-to-reach places and narrow stems of prestress T-sections are no longer a problem when the new Viberette Vibrator is on the job. It is designed especially for prestress and narrow form building construction.

The *12,000 rpm speed* and low amplitude of Viberette produces extremely effective vibration in consolidating low slump concrete.

A *small diameter* flexible drive with replaceable rubber tipped head makes it ideal for concrete compaction in constricted areas.

A *powerful,* universal ¾ HP electric motor gives Viberette plenty of "kick" for thorough vibration.

The 19 lb. Viberette Vibrator with new, dual grip, skid type handle makes the entire unit easy for one man to operate. A new shoulder strap attachment leaves both hands of operator free to manipulate the flexible drive.



Features

Interchangeable heads—1", 1-5/16" and 1-3/4" dia.
Flexible drive lengths—1' to 20'
Quick release drive connection
Replaceable rubber or steel tips

Contact your dealer or write direct for detailed information.
Viber Company, 726 South Flower Street
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VIBER CO **VIBRATORS**

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 262

(Continued from preceding page)

For more facts on Insert, circle No. 264→

A Clipper saw with a Clipper 14-inch diamond blade is used to cut glazed tile for partition walls.

about 15 feet below the footings of the existing wall.

To prevent the existing footings from being undermined, and to give the old building added support, the contractor decided to build a 12-foot-high concrete wall under the existing footings. A single row of H-beam piles was first driven at intervals alongside the existing wall. Then, as excavation proceeded down below the old footings, timber lagging was inserted between the H-piles to retain the sides of the hole.

The dirt that supported the footings was removed by hand in 4.5-foot-wide sections. After each section had been excavated, the wall was formed on the outside only, and poured with concrete. To insure good support, the contractor placed a non-shrinking grout in a gap left between the top of the new wall and the bottom of the old footing. Working in sections, crews left only 4.5 feet of the original wall unsupported at one time.

Before the contractor started the new wall, three rows of Raymond poured-in-place piles were put down to an average depth of 30 feet to provide support for the footing. The new wall, which enclosed the previously driven H-piles, was poured up against the wall of the abutting building. A layer of waterproofing prevented a bond between the two walls.

A 1,500-pound Kwix-Mix Moto-Bug fork-lift keeps crews inside the building supplied with mortar, as well as block and masonry material. It was light enough to use the freight elevator to reach all five floors.

Steel erection

The structural steel, furnished by Pittsburgh-Des Moines Steel Co. of Des Moines, called for some big lifts. The main supporting member for the balcony of the auditorium was a giant plate girder, measuring 89 feet long and weighing 38 tons. Lifting the big girder into position on top of two steel columns was particularly difficult because of obstructing pedestals, and because the two cranes had to work on sloping ground.

To make the lift, J. C. White Crane Service of Des Moines used a Lorain 20-ton and another 25-ton motor crane. Working with 40-foot booms, the two cranes brought the girder up to the base of the two columns. When the girder had been lifted directly over the columns, steelworkers shoved their erection pins home and bolted the ends into place. The connection to the top of the column permitted expansion in the 89-foot girder.

The roof trusses of the gym, which were set in place by the contractor, were not as heavy as the big girder, but they measured a little longer. The 97-foot roof trusses were trucked into the job in two pieces, and then bolted together on the ground beneath the columns. Two Lorain motor cranes, each with 70 feet of boom and 20 feet of jib, placed each truss. High-tensile steel bolts were used in making all field connections. Ingersoll-Rand impact wrenches tightened the bolts to 300-foot-pounds torque.

Special Sonotubes were used to enclose some of the steel columns with concrete. The fiber tubes are manufactured in one piece to fit over any inside steel, but since this was not possible with the steel columns, special Sonotubes were wrapped around the columns.

The tubes were made up in two separate parts—an inner tube and an outer tube. Both tubes were split for their entire length so that they could be placed around a column. After the seams of the two tubes were set at right angles to each other, the form was banded with steel.

A good communications system also

Carve rock into road...faster
Choose Gardner-Denver Drills and Portables

Get rock out of the way . . . keep contracts on schedule—with a Gardner-Denver rock drilling team.

"Air Trac"®—self-propelled for quick, accurate spotting of vertical, horizontal or angle holes . . . available with 4" or 4½" rock drills.

Rotary 600—Water-oil cooling system . . . clutch for cold-weather starting . . . easy-to-get-at parts to simplify field maintenance.

Other Gardner-Denver air-powered equipment for the contractor includes:

Fast-drilling sinkers

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For more facts, use Request Card at page 18 and circle No. 263

Look ahead...*move ahead*...and stay ahead
with Allis-Chalmers

. . . the construction machinery that keeps your production rolling

YEARS AHEAD IN DESIGN

extra performance

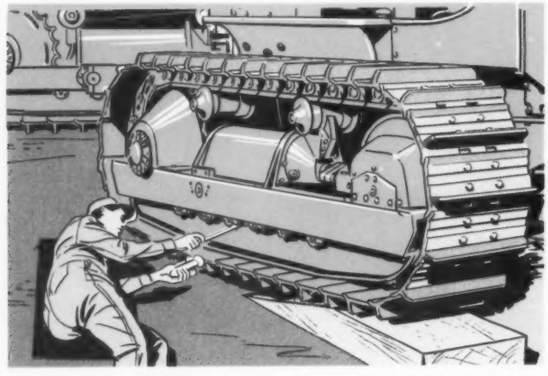
unequalled dependability

. . . backed by qualified dealer service

Your Allis-Chalmers Dealer is a Specialist in Se

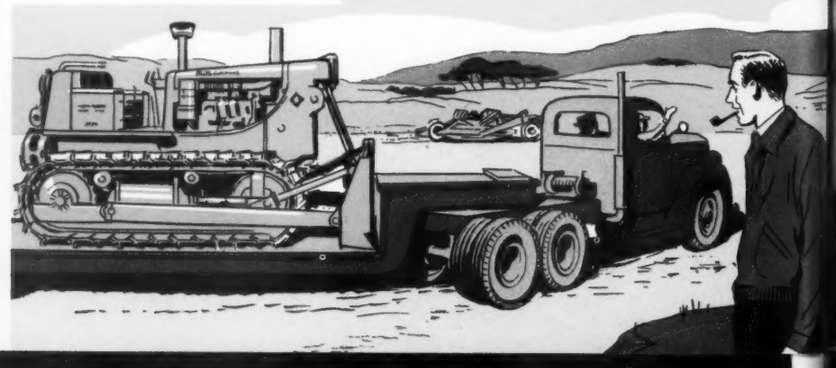
Your Allis-Chalmers dealer *knows* the equipment he sells. He can give you the expert service in shop and field that results in "like-new" performance from every Allis-Chalmers unit in your fleet . . . keeps them producing on your jobs.

Add the availability of Allis-Chalmers parts—made in the same factory, to the same rigid specifications as original equipment—and you have a program built to maintain top performance, long equipment life, low job costs for *you!*

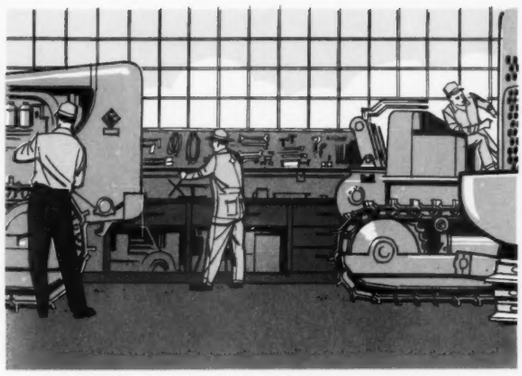


Careful pre-delivery servicing assures that Allis-Chalmers construction machines have been thoroughly rechecked . . . and that they're ready for work as soon as you get them.

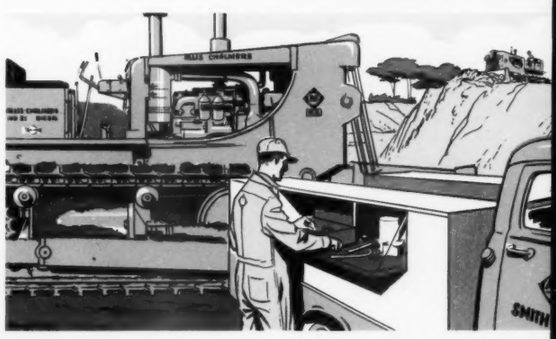
Detailed information on maintenance, adjustmen and other facts on care of the machinery is delivere with the equipment. Operating tips are passed alon to your men—to help them get started right and g the most from their equipment.



st in Service



Shop service at your Allis-Chalmers dealer is fast and efficient—because it's handled by factory-trained men, using factory-approved tools, equipment and methods. Specialized mechanics and special facilities all help to speed service.



Prompt field service—A call—any time, day or night—brings a qualified serviceman and a fully equipped "mobile workshop." Result—problems can be quickly and accurately solved . . . equipment put back on the job with minimum delay.

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Scheduling checkups with your Allis-Chalmers dealer will insure that proper maintenance procedures are followed . . . stop trouble before it starts . . . keep your machines producing.

. . . and there's more to this important story . . .

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ALWAYS READY TO ROLL...

. . . with qualified service . . . original specification parts

ENGINEERED RIGHT
Allis-Chalmers parts are designed as original equipment . . . benefit from intensive metallurgical research. And each comes from the drawing boards of experienced construction machinery engineers.

MANUFACTURED RIGHT
Precision-made parts assure long-life service. They're made by skilled craftsmen on modern industrial machinery and are subjected to original-equipment inspection and testing.

TO PERFORM RIGHT
Each part is made of top-quality material, heat-treated to correct hardness and made to exact specifications. You can depend on them for full-capacity production on the toughest jobs you have.

The men of your Allis-Chalmers dealer organization know local conditions. Look to them for equipment recommendations to fit your job requirements . . . for true value in used machinery.

Look ahead...*move ahead*...and stay ahead

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FORM MS-1305

LITHO. IN U.S.A.

Jim Kenworthy, superintendent, calls one of his men on an upper floor with a Rauland electric public-address system. Phones and loudspeakers are located on each floor.

TWO PRINCIPAL SEGMENTS of a sewer tunnel are linked 100 feet beneath downtown Pittsburgh, Pa. A 10-foot-diameter tunnel has been holed upstream along the Allegheny River from Belmont Street and downstream from 36th Street, both portions meeting at Tenth Street. This is a distance of 3.6 miles. The contractor, Dravo Corp., Pittsburgh, is building 10 miles of the interceptor sewer system for the Allegheny County Sanitary Authority.

contributed to the speed of the project. Anybody on the job could be reached by a public-address system from the superintendent's office on the first floor of the plant building. Loudspeakers on each of the five floors of the plant building, as well as several outside speakers, were connected to the Rauland electric PA system in the office. Telephones on each floor permitted two-way communication between the superintendent's office and the men on the job.

Personnel

Jim Kenworthy superintended the job for The Weitz Co. Harry Kavnaugh was the architect's representative. In charge of the new construction for the Des Moines Independent Community School District was George Blakesley. THE END

McKee and Raymond form overseas association

Arthur G. McKee & Co., Cleveland, Ohio, and Raymond International, Inc., New York, N. Y., have entered into a working association for the designing, engineering, and construction of new petroleum refineries and chemical plants for overseas customers. Under the association, the two organizations will coordinate their know-how and services for future contracts in Europe, Asia, Africa, Australia, New Zealand, and South America.

McKee & Co. designs, engineers, and constructs plants and facilities for iron and steel manufacturers and for the petroleum industries throughout the world. Raymond International builds concrete foundations under highways, bridges, and municipal and industrial buildings, and does all types of heavy construction in foreign territory.

Civil defense coordinator outlines emergency plans

Col. John C. Lowry (U. S. A., ret.), civil defense engineer coordinator for the Ohio Department of Highways, is organizing plans for rescue and emergency operations. He is outlining urban evacuation and survival plans, designating separate routes on the state system for various emergency purposes. The department's personnel is being assigned as emergency crews.

For more facts, use Request Card at page 18 and circle No. 265

Rolling across the temporary bridge over U. S. 61 just outside Davenport, Iowa, a Euclid 24-yard scraper heads toward the fill for the new highway. The bridge made it easy for the contractor to keep earthmovers working while traffic continued to use the road.

Temporary bridge solve

What threatened to be a major difficulty during the grading of a new route into Davenport, Iowa, never materialized—largely because of the foresight of the contractor.

On this job, the greater part of 700,000 cubic yards of dirt had to be moved across heavily traveled U. S. 61. A couple of flagmen could direct traffic, but because of the amount of dirt to be moved and the volume of traffic on the road, the flagmen would be likely prospects for nervous breakdowns and a few automobiles might get moved along with the dirt. E. M. Duesenberg, Inc., Mason City, Iowa, also intended to work nights, and this added to the problem.

A way out was provided when Duesenberg built its own grade separation. Rubber-tire scrapers roared over the timber and steel-girder bridge while motorists buzzed happily on their way into Davenport. The dirt was moved efficiently and safely, and the motoring public had no harsh words for Duesenberg in particular or road construction in general.

Temporary bridge

The bridge that carried the scrapers over old U. S. 61 was no architect's dream, but it helped get the job done. The two bents on either side of the highway consisted of wood piling capped with 12×12 timbers. The six piles of each bent were backed with a wall of 3-inch planks. Cables attached to deadmen held the piles vertical to resist the pressure of the embankment. The piles were cut off at a height that gave the bridge a 14-foot 4-inch clearance.

The 28-foot span between the timber bents was made by 20-inch I-beams. The decking consisted of two thicknesses of 3-inch planks. The bridge was wide enough to permit only one scraper to cross at a time. Most of the embankment used for the approaches will be used in the new permanent grade separation at this point.

Fast, safe road

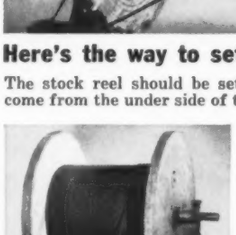
The 3.3-mile stretch of highway graded by Duesenberg replaces part of State Route 22 and U. S. 61, and is scheduled to be finished this fall to give motorists approaching Davenport from the west a faster and safer drive into the city. The four-lane highway cuts through steep clay bluffs at the western limits of Davenport, before dropping down onto the flat land of

Tuffy® Wire Rop

How to Get Longer Service from Wire Rope: Proper Unwinding, Socketing, Seizing, Clipping

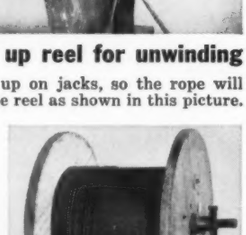
Here's the way to set up reel for unwinding

The stock reel should be set up on jacks, so the rope will come from the under side of the reel as shown in this picture.



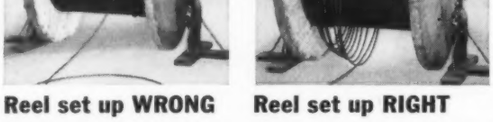
Reel set up WRONG

The rope is coming from the top of the reel and forming loops as the reel over-runs. These loops are likely to form kinks and dog-legs, which can be ruinous to rope life.



Reel set up RIGHT

Unwinding has started, and the reel is spinning faster than the rope is being pulled off. But because it's coming from the under side of the reel, the rope is simply loosening on the reel, with no damage.



Simple way for PROPER SEIZING

Since practically all wire ropes today are preformed, we suggest that when cutting you put only one seizing on each side of the cut.

For ropes other than preformed, *three* seizings should be used on each side of the cut so there will be no misplacement or relative movement of strands. *Four* seizings on each side are required for a lang lay rope, or any rope having an independent wire rope core or a wire strand core. *Four* seizings are also needed for all 18x7 ropes, and all ropes larger than 1" diameter.

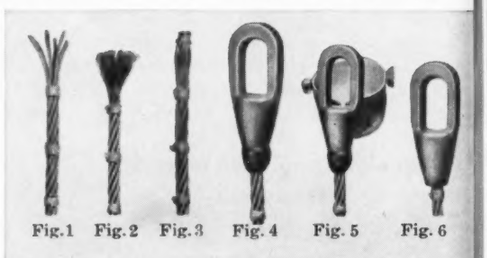
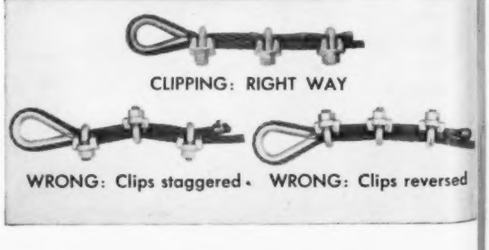


Fig. 1 Fig. 2 Fig. 3 Fig. 4 Fig. 5 Fig. 6

Nine Steps of Correct SOCKETING

1. Securely seize and serve with soft wire ties before cut ting, and have at least two additional seizings placed at a distance from the end equal to the length of the baske of the socket.
2. When the rope is properly seized, take off the en seizing. Cut the fiber center back to the seizing, as shown i Fig. 1 above. Untwist and broom out the wires. See Fig. 2
3. Clean the wires for the distance they are to be inserted i the socket. Use benzine, naphtha, gasoline or other solvent Then wash off in boiling water or boiling ammonium chlorid used in Step 5.
4. Then dip cleaned wires in commercial muriatic acid to a depth not greater than ¾ of the cleaned length of wire Keep the wires immersed for 3 minutes, or until the aci has thoroughly etched each wire. Be sure acid does no contact any other portion of rope.
5. Immerse wires into boiling ammonium chloride. A white coating will be left on the wires.
6. Place a temporary tie wire over the ends of the cleaned wire (see Fig. 3). Be careful not to get the cleaned wires greasy or oily.
7. Insert the rope end into bottom of socket. Remove tem porary tie wire.
8. Holding the rope vertically in a vise, set the socket s that the wires are flush with top of the socket basket and seal the bottom with putty or clay (Fig. 4). Pour in among the wires about ½ teaspoon of sal ammoniac crystals.
9. Pour molten zinc into the basket to fill (Fig. 5). When zinc is solidified, remove seal. Socketing is complete as shown in Fig. 6.

58-3



CLIPPING: RIGHT WAY

WRONG: Clips staggered · WRONG: Clips reversed

A Euclid 15-yard scraper picks up a heaping load of the clay with a pushing assist from an Allis-Chalmers HD-21. Six of these 15-yard rigs were on the project.

olve highway grading problem

Scrapers use bridge to cross heavily traveled highway; approach fills become part of permanent bridge fill

the Mississippi Valley and following a relocated route to tie in with new construction in the city on River Street. The reinforced-concrete roadway will contain two 24-foot lanes, separated by a 4-foot raised concrete median. The pavement will be bordered by 10-foot dirt shoulders. Concrete will be placed directly on the clay embankment.

Overhaul is big item

Practically all of the dirt for the embankment along the valley bottom was provided by the big cuts through the hills and a borrow pit at the west end of the job. Euclid and Caterpillar scrapers cut the glacial clay out of the hills, rolled down across the temporary bridge, and wheeled out onto the flat. Some hauls were up to three miles long; the average ran about 1.5 miles.

Dirt flies

Putting the bridge to the test was a power-packed squadron of Euclid and Caterpillar scrapers. To make the long hauls, the contractor used three Caterpillar DW20's, six Euclid 15-yard scrapers, and a big Euclid that carried 24 yards.

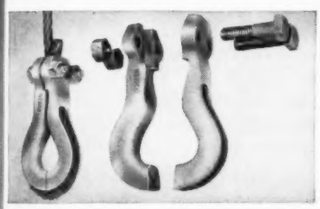
Cuts through the hills on the west end of the job ran wide and deep. The scrapers, pushed by Allis-Chalmers HD-21 tractors, gouged out the glacial clay to depths as much as 75 feet. In building the embankment on the valley stretch of the road, the scrapers borrowed some 250,000 yards from a deep pit cut into the hills.

The fill areas were leveled out with

(Continued on next page)

In the borrow pit, an Allis-Chalmers HD-21 pushes a Euclid 24-yard scraper to capacity. The Kohler light plant uses eight 1,500-watt floodlights for night work in this borrow pit, which supplied 250,000 yards of material for the fills.

Tips

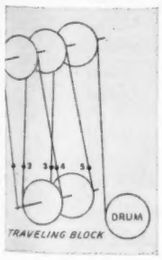


Be sure to use right FITTINGS

The fitting you use on wire rope can handicap it or enable it to work at full efficiency. Fittings which derive holding power from crimping action are harmful to the rope.

Shown here is a clamp that has no wrong side—can be put on either way. It snugly saddles the rope, grips larger surface area in such a way that loads are carried almost solely by friction rather than by crimping action. Combined in its two parts is a thimble and the parts are interlocking to prevent collapse of the thimble and to eliminate all shear on the bolts.

How to figure REEVING loads



Reeving ropes through the sheaves multiplies the number of parts supporting the load. The lead line to the drum carries the weight of the load lifted, divided by the number of parts of line supporting load, plus the accumulation of friction on all sheaves.

Here's how to count the number of parts supporting the load. Draw an imaginary line across the parts of the rope supporting the load.

The efficiency of reeving systems ranging from one to eight parts is shown in charts which Union Wire Rope engineers make available to users.

Your Tuffy distributor will help you with any wire rope problem

If you aren't acquainted with him, look under "Wire Rope" or "Slings" in the classified pages of your telephone directory. And ask him to put you on the mailing list for free "Rope Dope" educational bulletins. They're packed with boiled-down, useful information on the selection and care of wire rope for greatest service.

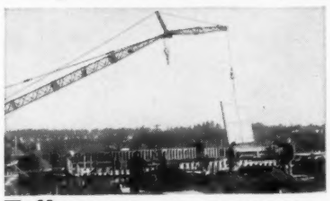
Extra Strength Alone Is Not Enough . . . Wire Rope Must Be BALANCED

Union Wire Rope Corporation has been making extra high strength rope for years for such uses as chokers in the logging industry, coke breakers in refineries and other purposes where it is a factor that overrides other rope characteristics.

But strength alone is not always the answer to the question of the proper rope to use. Extra high strength does not increase flexibility, resistance to crushing, abrasion or fatigue. It does not overcome the internal nicking and galling which occurs as the oil film breaks down from excessive pressures. It does not compensate for the core crushing which accompanies excessive loading. Extra high strength, in short, is not the only factor in proper design and use of wire rope.

Union Wire Rope combines such qualities as strength, flexibility and toughness in the properly balanced relationship to assure most efficient service and longest life in the operation for which the particular rope is designed. In most applications, extra high strength can add little to rope service if it throws other rope factors out of balance.

Tuffy BALANCED Special Purpose Wire Ropes



Tuffy BALANCED Slings & Hoist Lines

Top-performing team in every type of materials handling. Tuffy Slings are made of a patented, machine-braided fabric; stays extra flexible, can't be seriously hurt by knotting or kinking. Tuffy Hoist Line is a special construction of super flexibility and toughness.

Tuffy BALANCED Scraper Rope

It's flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Moves more yardage per foot because it's specially built and balanced to take the beating of drum-crushing abuse.

Tuffy BALANCED Dozer Rope

Built to give you longer service with less downtime. 150' reels of 1/2" or 9/16" mounted on your dozers allow you to cut off worn sections without wasting good rope. Put Tuffy Dozer Rope on the job and watch costs go down!

Tuffy BALANCED Dragline Rope

Made to give you maximum abrasive resistance with super flexibility. Rides smoothly on grooves; hugs the drum when casting for full load. Consistently dependable in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.

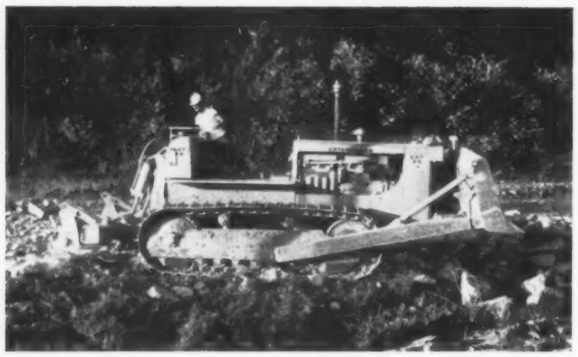
union Wire Rope corp.

SUBSIDIARY USS STEEL CORPORATION

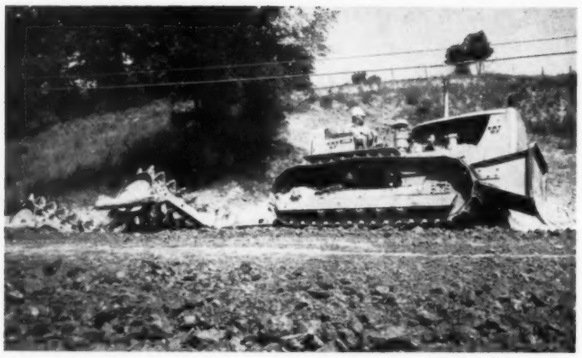
2260 Manchester Ave. **Kansas City 26, Mo.**

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

For more facts, use Request Card at page 18 and circle No. 266



Wherever the pavement of old State Route 22 was not buried by the new embankment, it was broken up and carried away. The two claws on the back of this D8 are ripping through the old pavement.



Glacial clay on the side slopes of the fill is compacted by a double LeTourneau-Westinghouse sheepsfoot roller pulled by a D7. One reason for the speed of this job: the material was moist and it compacted well.

(Continued from preceding page)

a D6 tractor-dozer and compacted by a LeTourneau-Westinghouse tandem sheepsfoot roller pulled by a D7 tractor. The soil was moist and compacted well. No specific moisture and density control was maintained on the fill. To maintain the haul roads and finish the slopes, the contractor used a No. 12 motor grader.

Dirt moved by night as well as by day on this fast-moving job. Operators got into the saddle at two o'clock in the morning and were replaced by the second shift at 12 noon. This shift worked until 10 p.m., and the tired Cats and "Eucs" had only 4 hours to get their crankcases drained and pick up new oil.

During the night work, one light tower illuminated the cut and another tower lighted the fill. Each 30-foot-high tower carried eight 1,500-watt floodlights that were run off a Kohler light plant. The angle-iron frame, which was set on steel skids, could be disassembled in 9-foot sections.

Personnel

The project manager for the contractor was Milton Duesenberg. The job superintendent on the morning shift was C. E. "Red" Grandon, and the job superintendent on the afternoon shift was Ted Veeder.

Donald R. Moeller was the resident engineer for the highway department. His assistant and chief inspector was William Upmeyer. THE END

Theory of design and structural analysis

"Theory of Structural Analysis and Design", by James Michalos, is primarily a textbook for undergraduate and graduate courses in civil engineering. The book discusses statics and geometry of beams and frames; continuous beams and frames; influence lines for beams and frames; and statically indeterminate trusses.

Other subjects cover arches, rings, and rigid frames; influence lines for arches; lateral and out-of-plane loading; space frames and curved girders; and secondary stresses and buckling. Tables, graphs, diagrams, and formulas illustrate the text in detail.

The $12 book may be purchased from the Ronald Press Co., 15 E. 26th St., New York 10, N. Y.

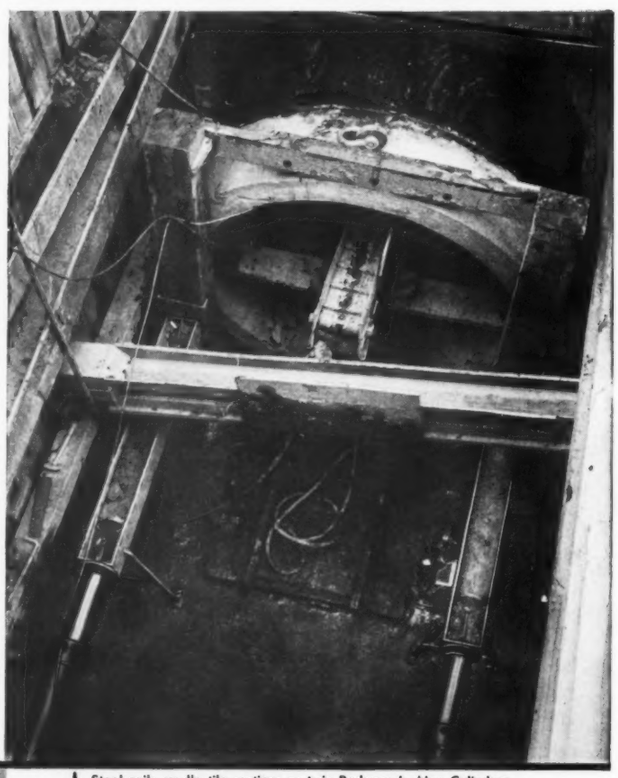
MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.



Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ⅓ of the 48" ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.

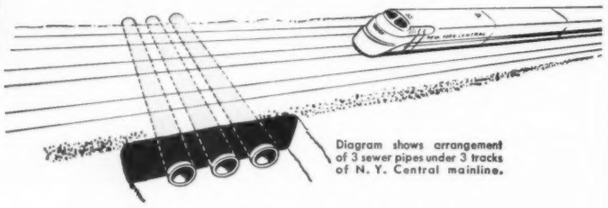


Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

JACKING PROCEDURE—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.

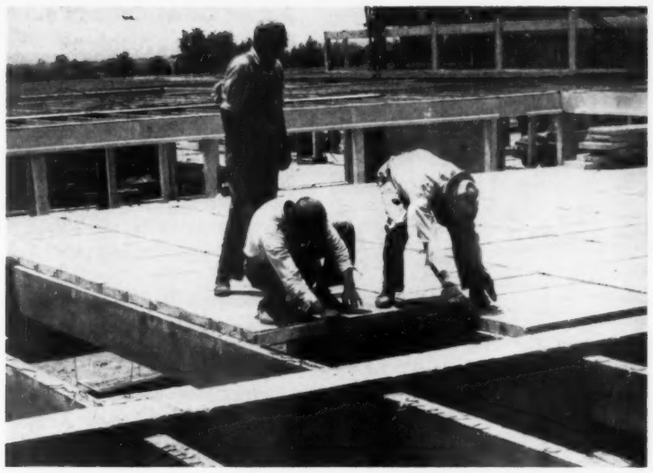
If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

7415 Walker St. • Minneapolis 16, Minnesota

For more facts, use Request Card at page 18 and circle No. 267

Precast Zonolite deck slabs are placed on precast joists during construction of a junior high school in Jackson, Tenn. The contractor post-tensioned girders, cast columns and beams in place, and precast roof slabs at the school site.



Precasting, prestressing make for economy in school construction

A combination of cast-in-place, precast, and prestressed-concrete methods proved to be the most economical and fastest way to erect the Isaac Burton Tigrett Junior High School in Jackson, Tenn. The school, containing 16 classrooms, a gymnasium, auditorium, and various other facilities, cost a total of $1,072,000.

The contractor, John H. Moore & Sons, Memphis, used 11 post-tensioned girders in the gymnasium and auditorium. A modified I-section was formed in place, with the forming supported by tubular scaffolding. Prescon prestressing elements were used in the girders, which were stressed when the concrete had reached a strength of 3,500 psi. The cast-in-place post-tensioned girders provide spans of up to 100 feet and support precast joists and the roof deck.

Rectangular joists were formed on a casting bed at the site. As the joists reached a strength adequate for handling, a dolly carried them into the building, and the joists were lifted into place. More than 1,300 joists were required in the building. The gymnasium seats 2,000, and the auditorium, 1,020.

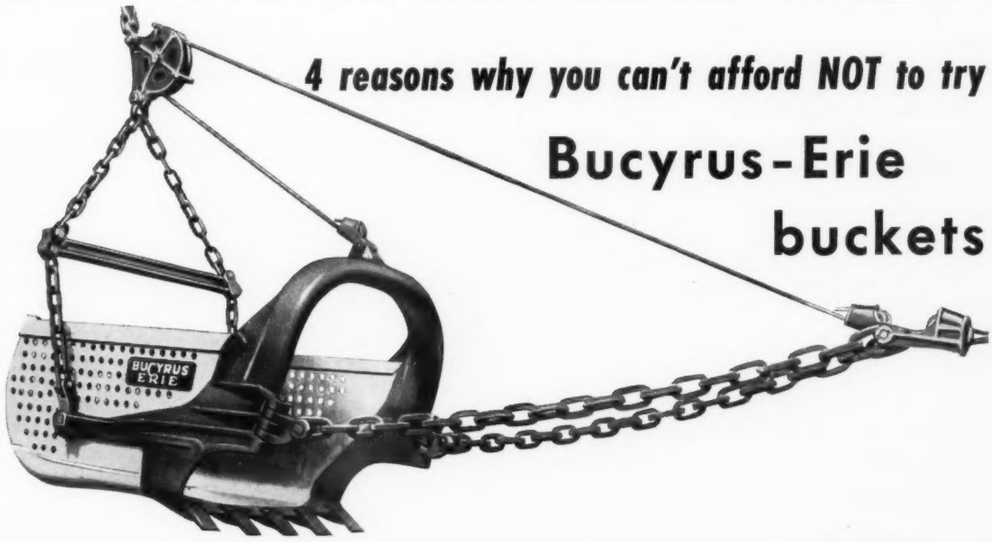
Classrooms

Cast-in-place columns and beams were used for classrooms and corridors. A two-stage casting method was used to make the corridor beams continuous with the joist system. The lower portion of the beams was cast up to the location of the neutral axis of the section; then the joists, with reinforcing projecting from the ends, were placed. The rods projecting from the joists were welded to the beam reinforcing, and the top portion of the beams was then formed and cast.

Precast Zonolite roof slabs were placed on all joists, the joints were grouted, and built-up roofing was installed. In corridor and classroom areas, a suspended acoustical ceiling was used.

Exterior walls are of pink velour brick with concrete masonry backup. All concrete masonry units were placed in a stacked bond pattern, and glazed tile wainscot is used in some corridor areas. Adjustable 12-inch-wide louvers were installed on all outside windows to provide light control and eliminate the need for shades or blinds. Natural lighting is obtained in some interior areas by Plexiglas skydomes installed in the roof.

THE END



4 reasons why you can't afford NOT to try

Bucyrus-Erie buckets

1. THEY *DIG!* . . . smack home hard in rock and hardpan, slice fast through dirt and clay. Teeth and lip are angled to penetrate fast and deep . . . handle easy on trimming.

2. STEADY ON THE SWING, Bucyrus-Erie buckets have excellent balance with proper flaring . . . cut down on bobbing and spilling to hold the load throughout the swing.

3. HIGH-ARCH Bucyrus-Erie buckets dump fast and clean. Inside flair, which lets you fill the bucket with less inhaul, gets rid of the load fast and clean.

4. BECOLOY MAKES THE BUCKETS TOUGH . . . it's a special alloy developed by Bucyrus-Erie for greater strength with less weight. It has a tough, fibrous structure with amazing strength, is used where you need it most . . . in teeth, lip, arch, and clevis plates.

Bucyrus-Erie buckets are available for light, medium, or heavy-duty service, solid or perforated. See your distributor today for the right size, price, and delivery. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

48R58

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

Northwestern Engineering Company, Denver, Colorado, uses its Bucyrus-Erie 2-yd. BM bucket on relocation of Colorado Highway 65.

For more facts, use Request Card at page 18 and circle No. 268

Names in the news

Howard A. Collins, president of The Moles.

The Moles elect new president

Howard A. Collins has been elected president of The Moles, an association of heavy-construction contractors and engineers, to succeed Richard A. Johnson, president of the Arthur A. Johnson Corp., New York City.

Collins is president of the Howard Collins Construction Co., Inc., New York City, a firm that handles major excavating and foundation jobs for Manhattan buildings. The firm has worked on such projects as the Lever House and Canada House, and is presently doing foundation work for the New York Times West Side plant and an addition to the Daily News Building.

The Moles also elected Mansell L. MacLean first vice president; Chester W. Cambell, second vice president; Harry T. Immerman, treasurer; Eugene F. Moran, Jr., secretary; and John C. MacElroy, sergeant-at-arms. Four men were elected to three-year trusteeships, and one to a one-year term.

AISI re-elects Fairless

The American Iron & Steel Institute has re-elected Benjamin F. Fairless president. Also re-elected were Max D. Howell, executive vice president; William M. Akin and Arthur B. Homer, vice presidents; George S. Rose, secretary; E. O. Sommer, Jr., treasurer; Charles M. Parker, assistant vice president; and F. A. Coombs, assistant secretary.

Sirrine elects officers

The J. E. Sirrine Co., consulting engineering firm of Greenville, S. C., has elected R. R. Adams president. Other new officers elected are A. D. Asbury, vice president and secretary; J. H. Bringhurst, Jr., G. W. Cumbus, H. S. Forrester, D. G. Moon, G. R. Morgan, M. M. Stokely, H. C. Swannell, and George Wrigley, Jr., vice presidents; and J. L. Roberson, Jr., treasurer. A. S. Bedell was elected chairman of the board.

Kelly & Gruzen promotes

Harold Rosen has been named associate of Kelly & Gruzen, architects and engineers of New York City, Newark, N. J., and Boston, Mass. He has served as chief of the firm's specification department, and before that was with the U. S. Army Corps of Engineers.

Daniel Construction Co. names vice president

Buck Mickel has been promoted to vice president and assistant general manager of Daniel Construction Co., Greenville, S. C. The former project manager and estimator has worked on such jobs as new manufacturing facilities for textile, ceramics, electronics, and paper industries in the South.

Bureau of Reclamation names Denver design chief

Louis G. Puls has been named chief designing engineer of the Bureau of Reclamation at Denver, Colo. He is the principal assistant of the assistant commissioner and chief engineer in all design matters, and is responsible for design activities of the bureau in 17 western states and Alaska. Puls succeeds Kenneth B. Keener, who recently retired.

Steinman personnel news

Walter S. Miles, public relations specialist, has joined the staff of D. B. Steinman, consulting engineer. The firm is currently engaged on the design or construction of over 40 major bridge and highway projects.

Dravo Corp. names

William D. Bickel has been elected a vice president of Dravo Corp., Pittsburgh, Pa., and general manager of the firm's Machinery Division. Harold R. Mantel, former auditor for Dravo, has been named assistant to the executive vice president; and Joseph V. Newman, formerly assistant auditor, has been promoted to auditor.

Stone & Webster promotes M. Cutler and R. Jacobs

Stone & Webster Engineering Corp., Boston, Mass., has promoted M. H. Cutler to assistant engineering manager and Robert M. Jacobs to chief structural engineer.

Cutler, who joined the firm in 1923, has done design and consulting work on power stations, industrial and chemical plants, office and institutional buildings in many parts of this country and Canada. Jacobs has worked on chemical and industrial

"Our Ford Tandems outlast

Says David Courtney, President
Courtney and Plummer, Inc., Neenah, Wis.

"We've got '49 model Fords with over 400,000 hard miles on 'em . . . and they're still going strong!

"Our Ford tandem dump trucks carry 8 yards of gravel and average about 50,000 miles per year. We've never had such good engine life, as with these Ford Heavy Duty V-8's.

"We started using Ford trucks with a model 'A' for dump service in 1930, and bought our first Ford heavy-duty job in 1949. After 125,000 miles of outstanding performance this F-8 was still running real good, so we added more Fords to our fleet. They keep working, year after year, with a minimum amount of upkeep . . . and that's really something in this business.

"With the addition of our four new '58s, we now have fifty-five Ford trucks and are very satisfied. And we like the fine service we get from our Ford Dealer. They always keep a complete stock of parts, so we don't have to carry any, and they stand behind what they sell 100%.

"I guess the best proof of how Ford trucks perform is the fact *we keep on buying more!* We just took delivery on a T-850 Extra Heavy with Super Duty V-8, and have several more on order for our transit-mix business."

Official registrations show ***AMERICAN BUSINESS BUYS MORE FORD TRUCKS THAN ANY OTHER MAKE!***

M. H. Cutler, left, and Robert M. Jacobs, assistant engineering manager and chief structural engineer, respectively, of Stone & Webster Engineering Corp.

plants, power stations, transmission lines, and nuclear facilities.

Elliot F. Jaquith has been appointed chief engineer for its newly established Industrial Projects Division. Jaquith was formerly engineering manager in the London office of the firm's English subsidiary, E. B. Badger & Sons Ltd.

Robert S. Boyd has been appointed manager of the Appraisal Division. Boyd joined the firm in 1956 as an appraisal engineer. He was previously manager of the valuation and real estate department of the Pittsburgh Railways Co.

Hunkin-Conkey elects president, chairman

William J. Hunkin, II, has been elected president and treasurer of The Hunkin-Conkey Construction Co., Cleveland, Ohio. He succeeds his father, S. J. Hunkin, who was elected president of the board. William Hunkin is a third-generation member of the family to head the company, which was formed in the early 1880's.

Raymond names overseas president

Nicholas A. Liberatore has been appointed president of the Raymond Concrete Pile Co. of the Americas, an overseas subsidiary of Raymond International Inc., New York City. Liberatore will direct company activities in Cuba, Mexico, and Central America.

Baker, McCallum appointed by Gibbs & Hill, Inc.

Gibbs & Hill, Inc., a consulting engineering, designing, and construction firm with offices in New York, Tampa, and Los Angeles, has appointed Robert R. Baker as chief civil engineer in the Tampa office. Baker was formerly associated with Palmer & Baker, Inc., Mobile, Ala.

The firm has also made Hugh H. McCallum consulting engineer in the Tampa office.

Corps of Engineers names new division engineer

Brig. Gen. William Whipple last month became Division Engineer of the Southwestern Division of the U. S. Army Corps of Engineers. He succeeded Gen. Lyle E. Seeman, the Division Engineer since September, 1954, who has been assigned to the office of the Deputy Chief of Staff for Logistics, Washington, D. C.

Gen. Whipple, formerly commander of the Communications Zone Base Section in Poitiers, France, has been serving with the U. S. Army, Europe, since 1955. From 1952 to 1955, he was Executive, Civil Works, in the Office of the Chief of Engineers in Washington, D. C.

Engineering firm head receives university award

Michael Baker, Jr., has received one of the Distinguished Alumnus Awards from Pennsylvania State University. Baker, who graduated in 1936 with a civil engineering degree, is the founder and president of Michael Baker, Jr., Inc., world-wide engineering firm with headquarters in Rochester, Pa.

Missouri Highway division names bridge engineer

C. P. Cummins has been appointed bridge engineer of Missouri's St. Louis County Highway Division. Cummins has previously served as draftsman, assistant engineer, bridge inspector, assistant bridge engineer, and engineer with various firms in Florida and St. Louis.

Federal Reserve economist joins Ford, Bacon & Davis

William H. Kester, business economist for the Federal Reserve Bank of St. Louis, has joined the New York City staff of Ford, Bacon & Davis, Inc., engineering consulting firm. Kester is also a specialist in industrial production, construction, labor markets, and retail trade and prices.

McNeil Construction news

Thomas J. O'Hara, Jr., formerly manager of operations for the McNeil Construction Co., Los Angeles, Calif., has been named vice president. O'Hara will be concerned with the expanding operations of the company in the building of missile plants and facilities.

Paving engineer for PCA

The Portland Cement Association has appointed Walter C. Oram paving engineer of its Rocky Mountain regional office, Denver, Colo. Oram was formerly general field engineer at the association's Seattle, Wash., district office.

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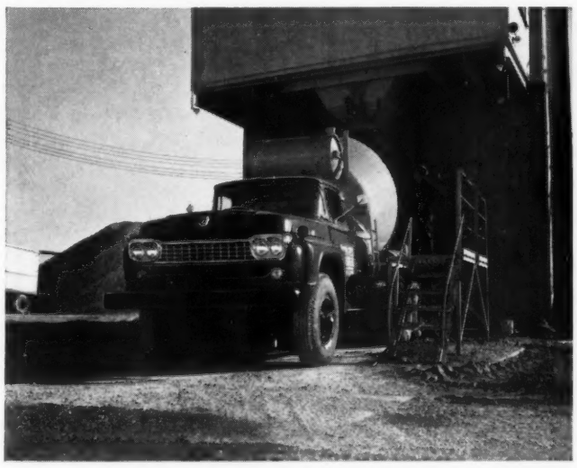

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Dredge and draglines tackle flood control job

The 15-inch cutterhead dredge Engler cuts a channel about 175 feet wide and 9 feet deep as it works on 2.1 miles of the relocated channel for a flood-control project on the upper Iowa River. The barge is maneuvered by two spuds at the rear and two swing lines at the front. The anchor barge that tends the dredge is equipped with a 35-foot boom and dragline.

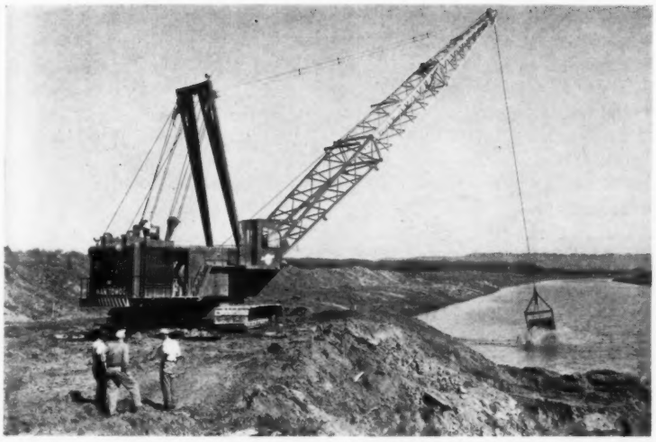
Cutterhead dredge digs 2.1 miles of new channel through swamp; draglines are used to widen and deepen 5.5 miles of river channel

by **BILL ALLEN**
field editor

Life-jacketed crews connect the Armco spiral welded discharge pipeline to a pipe running along spoil built up in the slough area. The derrick barge holds the pipeline while the connection is made.

A workman uses a Beebe Bros. 5-ton winch to raise the shore connection boom and adjust the height of the end section of the pipe. In the background, the Engler excavates through the swampy ground.

Men make the joint between two pipes with a Mobile Pulley & Machine Works ball coupling. Brackets on the pipe support a plank platform that makes it safe and convenient for men to walk the line.



A Manitowoc 4500 with 120 feet of boom uses a Hendrix 7-yard bucket to widen and deepen the existing channel. This work covered a 5.5-mile stretch, and it was handled by Mark Eischeid Contracting Co., New Hampton, Iowa.

Where the channel has to be deepened under three bridges, Eischeid uses a Lima Model 134 dragline and a crescent-shaped Sauerman drag bucket. One end of the cable is anchored to a tractor located across the river.

Different methods of excavation met the job conditions for a flood-control project on the upper Iowa River.

To excavate a new channel through 2.1 miles of swampy ground, LaCrosse Dredging Co., Chicago, brought in a 15-inch cutterhead dredge. The shallow-draft dredge chewed its way through silty sand laced with roots and stumps to excavate the 150-foot-wide channel.

To widen and deepen 5.5 miles of the river channel on the upper end of the project, a different method was used. Here, where the banks of the river were higher and more stable, a big Manitowoc 4500 dragline worked from wooden mats on the banks and swung a 7-yard bucket from the river bottom to the spoil banks. The Mark Eischeid Contracting Co., New Hampton, Iowa, the low bidder for this section, moved most of the 2 million yards of excavation with this one dragline.

Deepening the channel under the three bridges on the upper section of the project called for still another method of excavation. A Model 134 Lima dragline, rigged with a crescent-shaped Sauerman drag bucket, was used to dig under the bridge. With one end of the cable anchored to a Cat D6 crawler tractor on one side of the river, the dragline was able to operate on the opposite bank, scraping the material from under the bridges. A small dragline then took over to cast the material to the spoil bank.

This project, located in the northeast corner of Iowa where the upper Iowa River flows into the Mississippi, is being built under the supervision of the St. Paul District of the U. S. Army Corps of Engineers. Now almost completed, the job is designed to increase the capacity of the upper Iowa River to handle flows up to 10,000 cfs, so that frequent floods in the low-lying farmlands will be a thing of the past.

The lower 2.1 miles of the channel were relocated to give the river a more direct course to its outlet in Minnesota Slough, which flows into the Mississippi River. The upper 5.5 miles of the river channel, which run through farm land, were deepened and widened to a bottom width of 150 feet. On the upper section, where the river passes under three bridges,

(*Continued on next page*)

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Water from the discharge line is used to loosen a section of pipe that has been embedded in the soil.

Westinghouse air controls in the deckhouse are used to operate the main pump, ladder, swing, spuds, and the speed of the cutterhead. Gages indicate the amp load on the cutterhead, engine rpm, discharge-line pressure, and air pressure of the control system.

(Continued from preceding page)

the channel was deepened and lined with riprap.

Clearing

Under a low bid of $200,393, La Crosse Dredging Co. received the contract to clear and excavate the 2.1 miles of new channel. This work started with the clearing of the densely wooded swampland along the proposed route of the channel.

Cutting a swath about 260 feet wide, a Cat D8 and a D6 dozer pushed through the heavy timber. The D8, equipped with a Fleco stump-puller, rooted up the stumps. Trees too large to be pushed over by the dozers were cut down with Homelite chain saws. Trees, roots, and underbrush were pushed into piles and burned.

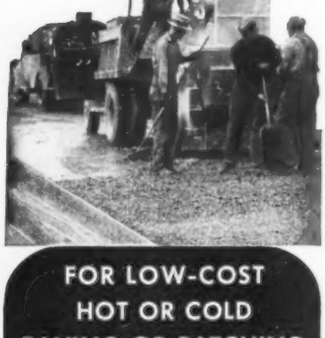
Dredging

Commencing at the Minnesota Slough end of the channel, the dredge Engler began work on the 628,000 cubic yards of excavation. The 15-inch hydraulic dredge cut itself a channel about 9 feet deep and 175 feet wide through the swampland.

Dredging of the silt-sand-clay mixture was slowed down by the presence of thousands of small roots in the soil. Some of these, picked up by the 42-inch cutterhead, entered the suction line and often lodged in the impeller of the Pettibone Mulliken 15-inch pump. When this happened, the dredge had to be shut down and the roots removed by hand from the impeller.

The floating section of the 15-inch discharge line was made up of 50-foot lengths of Armco spiral welded pipe joined with Mobile Pulley & Machine Works ball couplings. The excavated material was sometimes used to fill an intersecting slough. At other times it was pumped to a spoil area that had been cleared along the south bank.

Remodeling made the dredge Engler capable of shallow-water dredging. The 110×30-foot sectional steel hull had a draft of 3.5 feet, which could be further reduced to only 3 feet. During the remodeling, the 50-



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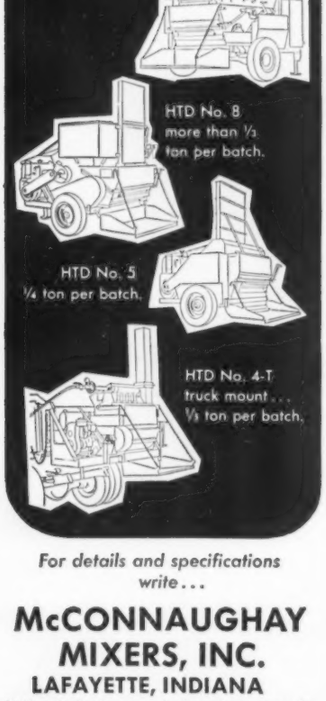

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Roots that have made their way through the cutterhead and into the suction line are removed from the impeller of the Pettibone Mulliken 15-inch pump while the dredge shuts down. This cleaning was necessary every so often, since the swampy ground was full of small roots.

foot ladder on the suction line was reduced to 30 feet to handle the low-water dredging. This permitted the cutterhead to bite into the bank at a sharper angle and reduced the number of roots picked up by the line.

The dredge was maneuvered by means of two spuds mounted at the rear of the hull and two forward swing lines connected to anchors on either side of the channel. The pump was driven by a Fairbanks Morse 960-hp diesel engine. All the operating machinery was controlled from Westinghouse air controls in the deckhouse.

Dragline widens channel

On the upper 5.5 miles of the project, where the existing channel was improved, the going was not so rough. After the comparatively small amount of clearing was done, Mark Eischeid Contracting Co. moved in its big dragline to start work on the 2 million yards of excavation.

Working up one side of the river and down the other in sections, a Manitowoc 4500 dragline widened the channel to a bottom width of 150 feet. The sides of the channel were cut back on 1 to 3 slopes. Separating the channel from the spoil banks was a berm, generally 30 feet wide.

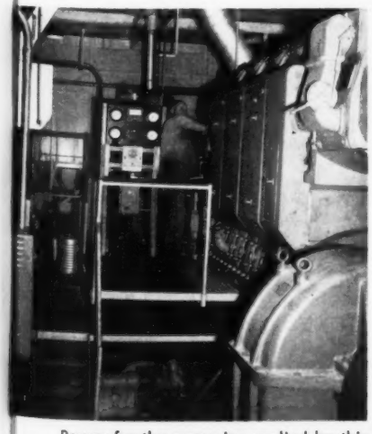
The big Manitowoc, working from the bank on wood mats, handled 120 feet of boom and a Hendrix 7-yard bucket. The excavated material was cast to the spoil banks, which were shaped by Cat tractors with dozers.

For night work, the dragline carried its own lighting system. Floodlights mounted on the boom illuminated the area where the bucket worked. Power was supplied to the system by a Hobart generator mounted on the cab.

The lighting system was in use much of the time, for the dragline operated during two 10-hour shifts. According to the contractor, the Manitowoc moved from 4,000 to 6,000 yards of dirt per shift.

The St. Paul District of the Corps of Engineers is headed by Col. Desloge Brown. The project is supervised by resident engineer Vernon Holmstrom and inspector Wally Billings. For La Crosse Dredging Co., Wilmer Atkinson was the superintendent. Victor Hess superintended the work for Mark Eischeid Contracting Co.

THE END



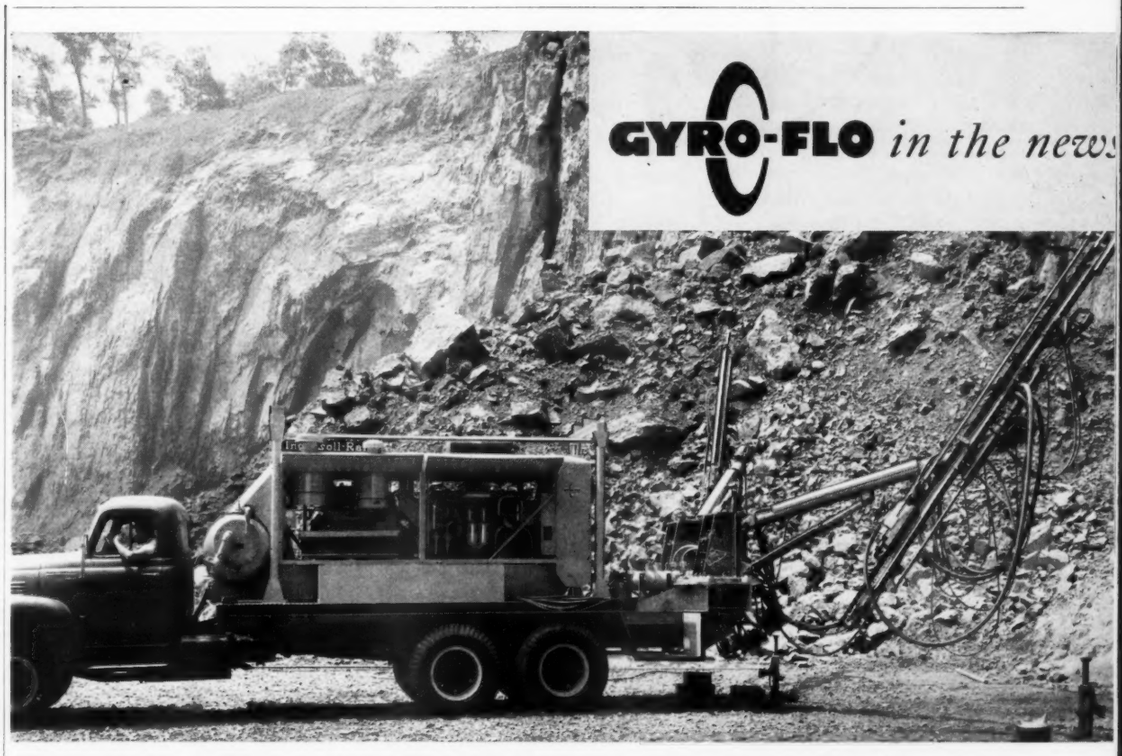
Power for the pump is supplied by this Fairbanks Morse 960-hp diesel engine, which drives the pump through a reduction gear. Electricity for the lights and for the electric motors that run the operating hoists is provided by a 450-hp diesel engine.

For more facts, circle No. 274→

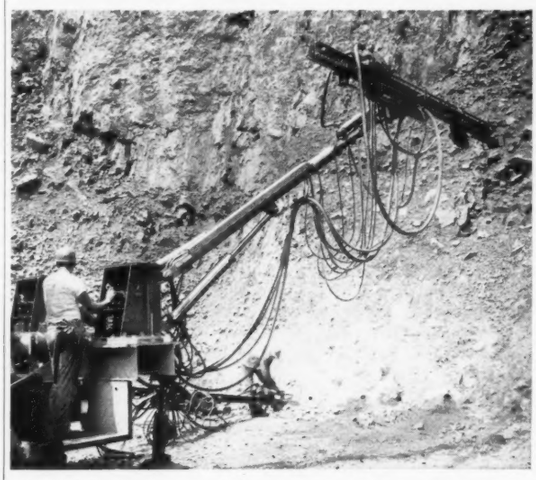
ARBA chapter honors Representative Hansen

The Washington State College Student Chapter of the American Road Builders' Association has presented Representative Julia B. Hansen with a plaque and certificate of recognition for her outstanding leadership in the construction and promotion of public roads. Mrs. Hansen is chairman of the Roads and Bridges Committee of the Washington State House of Representatives.

A state representative for the past 20 years, Mrs. Hansen is the only woman serving as chairman of a legislative highway committee in the nation. She has been a member of the state legislature's interim committee on highways, streets, and bridges since its inception in 1947.

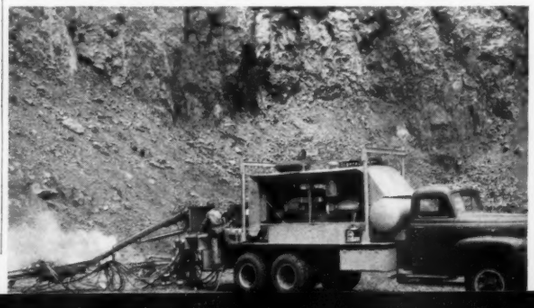


GYRO-FLO *in the news*



▲ High holes, horizontal or at any angle, are no problem at all with this truck-mounted drilling rig. Operator at the control station can "spot" the drill anywhere he wants at the touch of a throttle.

▼ Photo below shows that toe holes are "duck soup" for this Gyro-Flo 900 and Hydra-Boom combination.



Truck-Mounted Drilling Rig Helps Contract Driller Meet Deadline Dates

"Take a highway truck chassis, add a 900-cfm Gyro-Flo compressor and two I-R Hydra-Boom units equipped with two D45, 4½" Bore drifter drills, and you're in business with the fastest contract-drilling unit you ever saw." So says an official of the New Jersey Drilling Co., who admits that this is a slight oversimplification. "Some planning and good design went into this rig, too. The I-R distributor and sales engineer sure did a fine job on this rig."

The truck-mounted drilling rig shown here has lived up to his every expectation—helped him finish up faster and meet the tightest deadlines with a minimum of man-hours and drilling expense.

GYRO-FLO 900 PROVIDES AMPLE AIR POWER

A standard 900-cfm Gyro-Flo rotary portable compressor, less running gear, was mounted on a 6-wheel highway truck chassis. There was plenty of room available to mount two Hydra-Boom drills. The completely self-contained compressor provides ample air power for any job—will run both heavy-duty drills simultaneously at full pressure. The rig can move from job to job at a moment's notice and at maximum highway speeds. A frame above the compressor holds the drill towers while in transit.

HYDRA-BOOMS CONVERT SETUP TIME TO DRILLING TIME

With two heavy-duty I-R D45 rock drills mounted on Hydra-Booms, the New Jersey Drilling Co. can set up to drill any type of hole patterns in a matter of minutes. All drill-tower motions, including power dump and swing and power cone, are controlled by the touch of a throttle. Husky hydraulic cylinders, five for each drill, have completely replaced the time-consuming muscle power formerly required to set up for each hole.

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Joe Hardhat: Sample super

Meet Joe Hardhat. He's a construction superintendent, and you'll find him on almost any kind of job you visit. He's an affable, hard-working guy, with the field experience it takes to handle the tough jobs and command the respect of his men.

As far as statistics go, he's 44 years old and has been in construction work since he was 21. He's been with his present employer 13 years, the last 6 of which he has spent as a superintendent. He's worked most often on highway jobs, with bridges next and airfields, tunnels, and dams tying for third place.

On the personal side, he's married and has 2.4 children. When it comes to recreation, he prefers fishing, hunting, and golf, in that order.

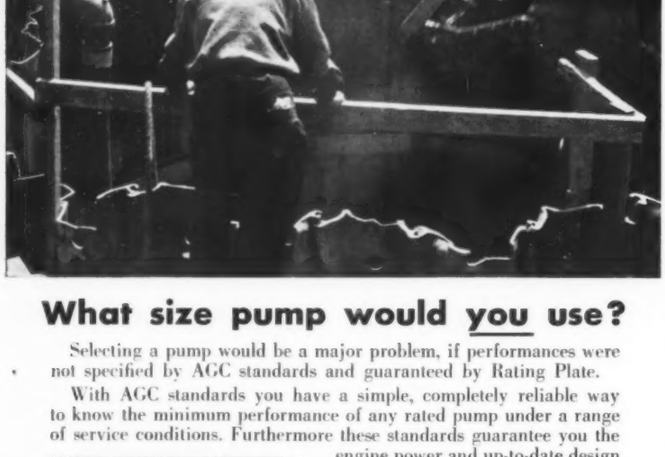
Of course you know by now that Joe is a fictitious character; the "2.4 children" gave that away. He's a composite of a number of superintendents, and so we might call him a sort of average job boss.

Western type

But in all fairness, we can't exactly call him typical. He represents an average of only a handful of superintendents that our Midwestern and Western field editors ran into recently. Perhaps we can at least say he's typical of superintendents in those sections of the country.

Anyway, the 15 men our editors talked to averaged out to a pattern like that above, and provided us with some interesting statistics like those that follow.

Our age range is probably as wide as you'll find in any real survey: the oldest superintendent is 71 and the



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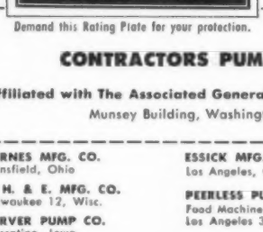

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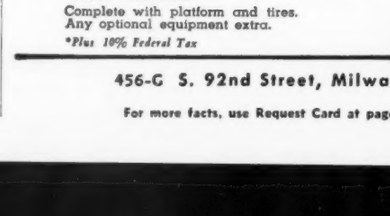

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youngest is 32. Our average age of 44, however, shows that most are on the young side of middle age—vigorous men with probably a good many years left in the field.

The average number of years in the construction business is 23, with the outside totals 58 (for our 71-year-old veteran) and 12 (for the 32-year-old youngster). One has been with his present employer for 30 years; two for only 3 years. The average of 13 years with the same company seems to indicate a fair degree of stability where supervisory personnel is concerned.

As to years in their present supervisory capacity, three have been superintendents 11 years, one for only a year. Our oldest veteran didn't give the number of years he's served in this role, so perhaps he holds the record.

Early starters

Interesting sidelights are that, of the men interviewed, three have been with one company since they started out in construction; one started out in the game at the tender age of 13, and two others at 14.

One thing appears certain: our superintendent is definitely a family man. All of our contacts are married, and all have one or more children. The total number of children for the group is 18 boys and 16 girls, which may indicate something—or nothing. The largest number of children in one family is 6, while five have only one child. Several of the group have grandchildren.

One of our superintendents has a son working on his project.

Quite naturally, our superintendents' choice of recreational pursuits indicates that they are outdoor men. Six prefer fishing; four, hunting; three, golf; and one each, horse racing, dog raising, bowling, gardening, rifle shooting, and baseball.

An interesting fact is that only one of our sampling named baseball—supposedly America's favorite sport—as a preferred hobby or recreational pursuit. It would seem that our men prefer the active, rather than the spectator, role when it comes to sports.

Some "too busy"

One superintendent said he was too busy for any hobbies or sports; several others gave their preferences but added the words "when I have time".

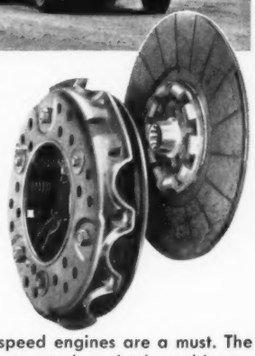
Working in the Midwest and Far West as our contacts do, they naturally tend to represent states in those regions. Texas, Iowa, Missouri, and Montana are home for two each; while Idaho, New Mexico, Nevada, Arizona, Illinois, and Washington, D. C., claim one each.

Nine of these job bosses have worked on highway projects, five on bridges, and four each on tunnels, dams, and airfields. Three reported experience on building jobs. Pipelines, canals, flood-control structures, water towers, and railroads were mentioned by one each.

Five of the superintendents have worked in the Southwest and Midwest, four in the Far West, three in the Northwest, two in the South, and one on the Eastern seaboard. Foreign assignments have taken them to Canada, Mexico, Alaska, Hawaii, Iceland, Central America, and the islands of the South Pacific.

Further unusual facts: One of our men was born in Scotland; another is a former partner in a paving contractor firm. One is a former newspaper publisher; another, a former semipro baseball player. THE END

ROCKFORD



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Power Take-Offs

Speed Reducers

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
314 Catherine St., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 277

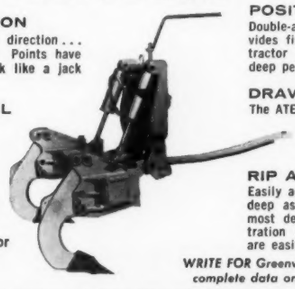
Big Ripper Tackles Tough Rock Jobs

Designed to use full power of IH TD14, TD18, TD20 or TD24

The tremendous power of the IH TD14, TD18 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper, shatters rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated. Put this power-packed team to work for you. Your IH dealer can give you the facts. Let him show you how you can save as much as 25% on any earth or rock moving job.

LIVE SWIVEL ACTION
Shanks swivel 15° in either direction... follow tractor like a trailer. Points have live action that shatters rock like a jack hammer.

RUGGED POWERFUL SHANKS
Scientific contour gives extra strength at strain points and pulls points down deep... rocks roll out and clear of head-frame. Made of tough, heat-treated, manganese-moly steel. Mount one, two or three shanks as needed.



POSITIVE CONTROL
Double-acting hydraulic system provides fingertip control and puts full tractor weight on points for fast, deep penetration.

DRAWBAR TAKES PULL
The ATECO drawbar replaces the tractor drawbar and drawbar brackets. Clevis is accessible with ripper installed.

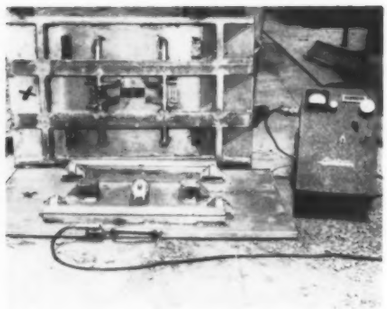
RIP AT ANY DEPTH
Easily adjusted to permit settings as deep as 24". Points are always at most desirable angle for best penetration and splitting action. Points are easily replaced.

WRITE FOR Greenville Bulletin IH-658. It gives complete data on the Greenville-Ateco ripper.

See it at your International-Harvester Dealer's

GREENVILLE
STEEL CAR COMPANY
ATECO DIVISION
Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 278



The Streeter-Amet electronic scale contains five load rings, located in each corner and in the center, which are deflected when a load is imposed on the top plate. The amount of deflection is translated into pounds per load.

Electronic scales correct error in estimates of scraper loads

Electronic scales that accurately compute scraper loads have enabled state highway engineers to eliminate some of the guesswork from their monthly estimates and to increase working capital for a contractor.

One New York contractor, O. & E. Contracting Co., Inc., Whitestone, weighed representative scrapers and proved to the engineers that their estimates should be increased by 40 per cent per load. O. & E. Contracting holds a $3,950,000 contract to construct 4.82 miles of Interstate Route 5, known as the Penn-Canada Highway, on the outskirts of Watertown, N. Y. Since 90 per cent of the 1,124,000 yards of excavation is borrow that comes from four pits along the right-of-way, the state highway engineers decided the most practical method of making estimates was to pay on the number of scraper loads moved.

This load estimate was based on experience with scrapers on similar types of work.

But the contractor felt that his Cat DW21 tractor-scrapers, 12 with No. 21 scrapers and 6 with No. 470 Low-bowl scrapers, were carrying more than the yardage estimated by the engineers. O. & E. Contracting contacted its equipment dealer, H. O. Penn Machinery Co., New York City, and the dealer sent an earthmoving representative with a set of new electronic scales from the Streeter-Amet Co., Grayslake, Ill.

Measuring loads

The scales measure wheel loads through the deflection of five small hardened steel load rings mounted on an aluminum platform. The top section of the platform rests on the five rings, and when the load is imposed the rings compress, deflecting the metal. Strain gages inside the rings measure this deflection, which is proportional to the weight on the platform.

The signals are transmitted to the control instrument, where they are

A scraper working on a Watertown, N. Y., project drives onto the scales to be weighed. The scales rest on the finished grade; a pit is unnecessary. The electronic scales showed that monthly estimates on scraper loads were off by about 40 per cent.

Always a GREEN LIGHT!

You Can Depend on NAYLOR Pipe for UNINTERRUPTED PERFORMANCE

There's smooth going through lines of NAYLOR Spiralweld pipe.

One of the advantages of NAYLOR'S exclusive spiral-lockseam structure is its factor of "give" which assures closer conformity to topographical conditions without any sacrifice of strength. This enables you to make up your lines quickly, regardless of terrain or man-made obstructions.

Along with the extra strength and safety built into this pipe is its light weight which simplifies handling and speeds installation. You save even more time and work when you use the one-piece NAYLOR Wedgelock coupling for connections.

For savings in time, work and money—it will pay you to specify NAYLOR pipe for dependable transportation of water and air, and for dredging, materials handling, ventilating and other services.

Write for Bulletin No. 507

NAYLOR

NAYLOR PIPE COMPANY

1270 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office
60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 279

se of electronic scales shows that contractor could be credited with 40 per cent more yards per load on highway grading project

With the left front wheel of the Cat DW21 tractor-scraper on the scales, a man from the H. O. Penn Machinery Co., New York City, adjusts the galvanometer to balance the current from strain gages that measure deflection. Scrapers are weighed in 3½ minutes.

added together, amplified, and balanced against a simulated load. Balancing is accomplished by dialing in resistance until the galvanometer is zeroed. The amount of resistance needed is shown on a counter in pounds of load. This scale is accurate to within two per cent. Power is supplied by plugging a cord into the cigarette lighter of a car with 12-volt system.

A load demonstration was set up on a section of finished grade near a 300,000-yard borrow pit. In five minutes the two 110-pound sections of the scales had been set up and the cords plugged in. Ten minutes were allowed for the control instrument to warm up. Two DW21's, one with No. 21 and one with No. 470 scrapers, were selected for the tests. The tractor operator was instructed to push in average loads.

An hour later, seven loads had been weighed and each scraper had been weighed empty. Only 3½ minutes had been required to weigh each DW21. After samples of the material had been weighed, it was determined that the loads averaged about 40 per cent over the estimates. Faced with these facts, the engineers decided to credit the contractor with 40 per cent more yards per load for the monthly estimates, thus increasing the working capital available to the contractor. THE END

Catalane represents P&H on AED round table

J. F. Catalane of Harnischfeger Corp., Milwaukee, Wis., has been chosen to serve on the Associated Equipment Distributors' 1958 Industry Round Table, which represents all segments of the construction-machinery industry. The round table committee, which is composed of 10 distributors and 20 manufacturers, recommends workable solutions for the mutual problems of manufacturers and distributors, and seeks to improve relations with the customer, government, and general public.

Catalane is general sales manager of Harnischfeger's Construction and Mining Division.

ABC, Interstate programs

States completed 50.3 miles of Interstate System projects in April, bringing the total completed project mileage to 1,453.9, according to a report from the Bureau of Public Roads. There are 2,714 miles of the system now under construction.

Work on the ABC program is under way on 21,578 miles of roads and streets.

FILL COMPACTION—Tests proved this DUO-PACTOR, owned by a Wisconsin contractor, gave nearly 100% of Proctor on a section of Illinois Tri-State Tollway. At day's end, the DUO-PACTOR makes a final pass to seal the surface so that it sheds water in case of rain.

Handle every phase of the job with just ONE compaction tool!

By combining steel and rubber rolls, DUO-PACTOR gives you a *complete* compaction and surface rolling system from initial fill to base course and seal coat—all in one rugged, low-cost, self-propelled unit. The closely spaced rubber tires confine surface pressures, preventing displacement, to form compacted tracks of high density. The steel roll chokes in the ridged material between the tracks, providing high, uniform density. On any kind of material, the alternate action of rubber and steel rolls produces higher, more uniform densities than can any one-purpose compaction equipment.

DUO-PACTOR costs far less to buy, too! You get the equal of two or more machines for one modest price. Before you buy *any* compaction equipment, it will pay to investigate DUO-PACTOR first.

SUBBASE—DUO-PACTOR's closely spaced rubber tires confine the material to prevent displacement. The steel roll provides uniform surface pressure for uniform leveling and compaction, thus providing the second phase of Duo-Paction.

BASE COURSE—Duo-Paction is highly desirable on base courses. The rubber rolls key in course materials, preventing segregation. The steel rolls then give a downward and lateral movement of the ridged material. This combined action results in high density and positive uniformity.

SEAL COAT—The DUO-PACTOR's rubber tires press the chips into the bitumen. Spring-mounted in pairs, their wide range of vertical travel provides high compressive pressures in the low spots. Final rolling is done with controlled pressure of the steel roll.

Send for free copy of "COMPACT FACTS . . . about DUO-PACTION."

Seaman-Gunnison Corporation
2763 S. 27th St., Milwaukee 15, Wis.

SEAMAN GUNNISON

- DUO-PACTOR
- Utility Scraper
- Bituminous Distributors
- Street Flushers

For more facts, use Request Card at page 18 and circle No. 280

Bulldozers are airlifted to isolated area for work on runway

At a remote ranger station in Idaho, workmen skid a heavy International TD-9 engine down a lumber ramp from a Douglas DC-3. Two disassembled International tractor-dozers were flown to the site, and then reassembled to construct a new landing strip.

Before men could build a new runway for planes in the remote mountainous area of Moose Creek Ranger Station, 100 miles east of Lewiston, Idaho, 25 acres of timber had to be cleared and burned, and 56,520 cubic yards of dirt had to be excavated. The job had one big hitch: how to get the equipment into the isolated area.

The nearest road was a mountain trail, over 25 miles away from the site. Actually, the area, famed for its hunting and fishing, is accessible only by air. The original 2,600-foot-long airstrip was fashioned with mules and manpower in 1932. Last year, more than 600 landings and takeoffs were made from this strip. But the amount is expected to be doubled this year, so the Forest Service and the Civil Aeronautics Authority decided that another longer runway was necessary for safe operation.

Bulldozer airlift

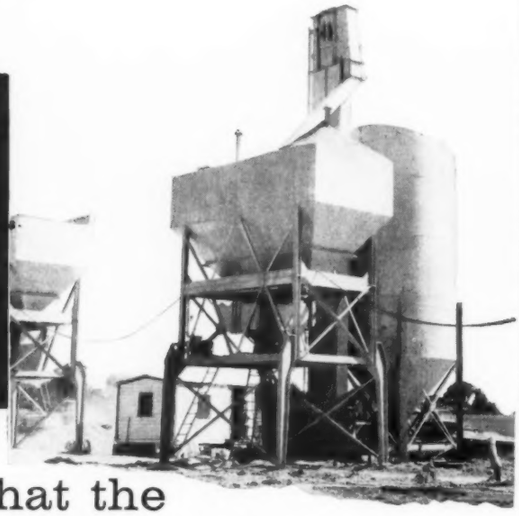
Henry Vanderwall of Grangeville, Idaho, holder of the $67,102 contract, was immediately faced with the problem of getting two International TD-9 crawler tractors, equipped with dozer blades, into the area. The conditions left Vanderwall only one alternative: to fly the equipment to the site. A Missoula, Mont., freight flying service was employed to bring in the tractors, fuel, and other necessary construction materials in Douglas DC-3 cargo-type airplanes.

The International TD-9's were dismantled so that the components could be handled by men and placed aboard the plane. The equipment was flown to the site and reassembled there. The two tractors, working as a team, cleared and burned 25 acres of timber and also helped excavate for the necessary drain tile. Finally, the rigs moved 56,520 cubic yards of dirt to construct the runway.

The new runway is 4,100 feet long and 250 feet wide. It is built to intersect with the old runway, which is 2,600 feet long and 450 feet wide. Both runways are of one-way direction because of the rugged mountains and tall timber. The strips can be used for landings and takeoffs only in the early morning or early evening hours because of the tricky air currents and crosswinds. THE END

Motor vehicle registrations during 1957 totaled 67,135,546, a 3 per cent gain over the 1956 records. California had the highest total registration in 1957.

You can't compete when it's obsolete!



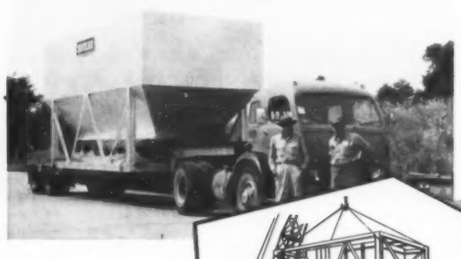
And it's a fact that the *BUTLER TX-4* Roadbuilders Plant obsoletes all existing batching plants

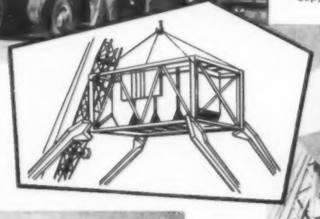
. . . And It's the World's Most Portable, too. All components—bin, batcher section and control panels — ship as complete packages on low-bed trailers or flat cars.

The TX-4 is the world's fastest batching plant . . . Operation on a 15 second batching cycle has been consistently maintained. *And the TX-4 grows with you.* Basic Plant handles one or two pavers. With one additional bin and a re-arrangement of batchers, the TX-4 keeps pace with three pavers. The same plant with four batchers per bin satisfies four pavers!

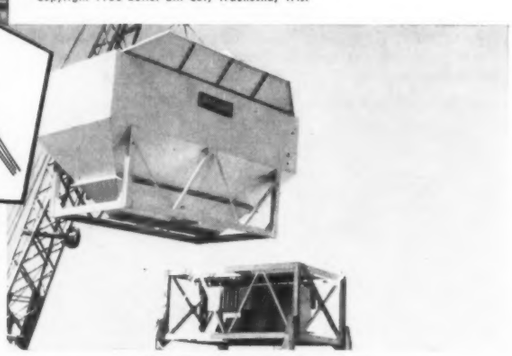
Get the TX-4. You can't compete if your plant's obsolete . . . or if you do bid successfully you've cut deeply into your profit margins.

Copyright 1958 Butler Bin Co., Waukesha, Wis.





Support columns are hinged to batcher section, swing into place as batchers are raised.



Complete bin swings into place, rests on batcher section.

Reserve cement bin ships as a complete unit with legs in-place.

BUTLER BIN COMPANY

971 BLACKSTONE AVENUE • WAUKESHA, WISCONSIN

For more facts, use Request Card at page 18 and circle No. 281

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Hydraulic hoe-shovel is versatile ½-yard excavator

Bucyrus-Erie's new H-5 Hydrohoe-Hydroshovel, companion to the H-5 Hydrocrane, is a ½-yard all-hydraulic excavator which mounts on any new or used suitable truck. A special feature is its rapid transport over the road from job to job.

Three hydraulic circuits, each supplied by a separate pump, provide 90 hydraulic horsepower for a variety of digging jobs. A total of 189,000 pounds of ram force is provided by the combination of crowd-down, dig, and wrist-action rams. A solid digging platform is provided by four hydraulically controlled outriggers.

Dippers measuring 24, 36, 48, and 60 inches are available, and each is easily reversed to make it a shovel. The unit is also available in a form which allows for quick field conversion for crane or clamshell operation.

The boom telescopes up to 4 feet, and folds over the truck cab for travel.

Six levers and two pedals comprise the controls, which are located in front of the operator.

For further information write to the Bucyrus-Erie Co., Dept. C&E, The Doerman Bldg., 10th and Michigan Aves., S. Milwaukee, Wis., or use the Request Card at page 18. Circle No. 130.

Crane lifts 5½ tons more than own weight

Capacity to lift 90,000 pounds with a 40-foot boom—11,000 pounds more than its own working weight—is one of the features of the crawler-mounted Model 545 Sprawler, a new crane introduced by Koehring Co.

Pivoting outriggers, used when making heavy lifts, are quickly swung into position and pedestals attached. When the crane is moving, the outriggers can be folded back to an out-of-the-way position alongside the crawlers, or can be removed completely. The 545 can "walk" with 61,500 pounds when the outriggers are not used, the company reports.

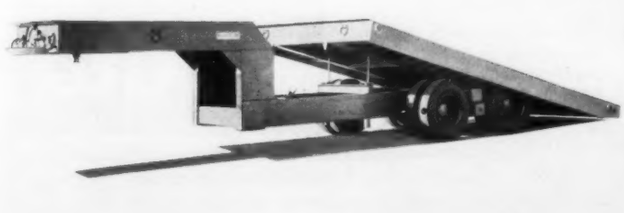
With the A-frame and boom in a lowered position, the Model 545 can be moved through structures with clearances as low as 16 feet. This clearance point can be further reduced to 11 feet 6 inches when boom and A-frame are removed.

Over-all length of standard crawlers is 14 feet 3 inches. When equipped with 30-inch shoes, the over-all width is 11 feet 2 inches.

The Model 545 is also available as a truck crane.

For further information write to the Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 45.

Tilting equipment trailer rated at 15-ton capacity



A 30,000-pound-capacity tandem-axle tilting trailer for transporting heavy machinery is offered by the Miller Tilt-Top Trailer Co. The unit is towed by a fifth-wheel tractor.

The Model OTG-15 features a gooseneck tongue which acts as a second frame underneath and independent of the tilting platform. This design permits full use of a wide over-the-wheels platform for hauling such large pieces as tractors and pavers.

To reduce jarring over rough terrain, the trailer combines tandem suspension with freely oscillating walking beams, permitting each set of dual wheels to rise and fall independently.

Frame construction of the trailer is said to be unusually heavy. Solid 2-inch oak decking is used.

Easy loading and unloading of the trailer by only one man is a feature.

For further information write to the Miller Tilt-Top Trailer Co., Dept. C&E, 450 S. 92nd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 132.

New hydraulic excavator has 3/8-yard capacity

A new carrier-mounted 3/8-yard Hopto excavator that can travel on the highway at speeds up to 50 miles an hour has been announced by the Badger Division of the Warner & Swasey Co.

The Model 200 Hopto features a new and more powerful hydraulic system delivering 72 gallons of oil per minute through a three-unit tandem pump that is said to insure constant power for all actions and simultaneous use of any combination of movements. Controls include both hand levers and foot pedals for improved operating efficiency.

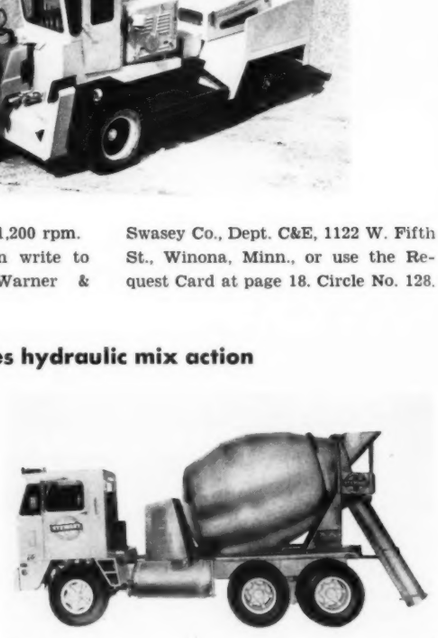
The machine has a 13½-foot digging depth, and a full range of quick-change attachments including both backhoe and shovel buckets. Conversion to shovel operation is made by simply changing buckets. Other features of the Model 200 Hopto include a 200-degree uninterrupted swing, heavy-duty box-type boom construction, 180-degree wrist action digging, and individually controlled hydraulic outriggers.

The Duplex carrier has a 16,000 gvw rating and a 124-inch wheelbase. It is powered by a 265-cubic-inch displacement engine and has a

225-foot-pound torque at 1,200 rpm.

For further information write to the Badger Division, Warner & Swasey Co., Dept. C&E, 1122 W. Fifth St., Winona, Minn., or use the Request Card at page 18. Circle No. 128.

Truck mixer features hydraulic mix action



AMPOZ' new Stewart Hydramix features hydraulic operation of the 7-yard mixer.

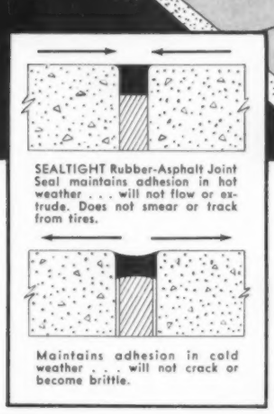
A new 7-yard truck mixer employing a hydraulic system to rotate the mixer is being marketed by the American Pozzolan Co. According to company officials, the Stewart Hydramix is the first practical hydraulic mixer available to the ready-mix industry.

By eliminating mechanical linkages such as control rods, levers, cranks, chains, and sprockets, the Hydramix offers simplicity of operation, reduced wear and maintenance expense, and such design advantages as shorter wheelbase, lower center of gravity, and less weight, according to the manufacturer.

The Stewart Hydramix standard package consists of the hydraulic mixer mounted on the new Crane Carrier flywheel-takeoff truck. The mixing unit is also available separately for ready installation on most makes and models of trucks.

For further information write to the American Pozzolan Co., Dept. C&E, P. O. Drawer 1431, Duncan, Okla., or use the Request Card at page 18. Circle No. 129.

JOINTS MAINTAIN THEIR SEAL UNDER ALL WEATHER CONDITIONS WITH...



SEALTIGHT Rubber-Asphalt Joint Seal maintains adhesion in hot weather . . . will not flow or extrude. Does not smear or track from tires.

Maintains adhesion in cold weather . . . will not crack or become brittle.

SEALTIGHT rubberized-asphalt compounds provide the ideal sealer for years of economical, trouble-free joints in concrete construction. They feature high resilient and adhesive properties and are able to maintain a bond at below zero temperatures. Will provide a positive seal in all types of monolithic construction. Designed for use with non-extruding type fibre expansion joints.

SEALTIGHT®

RUBBER-ASPHALT JOINT SEAL

RUBBER-ASPHALT JOINT SEAL compound available in both hot-pour and cold-applied types. SEALTIGHT Hot-Pour Rubber-Asphalt meets Federal Specifications SS-S-164 and CAA Specification P-605 . . . SEALTIGHT Cold-Applied Rubber-Asphalt meets Federal Specification SS-S-159 and CAA Specification P-615. Both are ideal for use in the joints of concrete streets, highways, bridges, etc.

JFR RUBBER-ASPHALT JOINT SEAL is recommended for sealing concrete runways where resistance to jet fuel is necessary. Available in Hot-Pour Type to meet Federal Specification SS-S-00167 and Cold-Applied Type that meets Federal Specification SS-S-00170. Easy and economical to apply.

TONGUE AND GROOVE Joint, used primarily as a longitudinal joint, provides a "keyed joint" that assures maximum efficiency in load transmission . . . helps to prevent blow-ups, spalling and controls cracking. Completely waterproof . . . produced from asphalt hardboard . . . is rigid, easy to handle and install, will not extrude. More economical and safer than steel center strips and will not rust away. Approved by Federal, State and Local engineering authorities.

EXPANSION JOINTS specifically designed to meet the needs of modern, properly-designed, properly-jointed construction projects. All types including Asphalt, Fibre, Sponge Rubber, Standard Cork, and Self-Expanding Cork joints available from "stock" at your local SEALTIGHT distributor. Meet Federal and State specifications.

SEALTIGHT®

PRODUCTS
- EXPANSION JOINTS . . . Asphalt, Fibre, Cork and Sponge Rubber.
- TONGUE and GROOVE Center Strip.
- Hot and Cold Rubber Asphalt Joint Seal.
- Hot and Cold JFR Rubber Asphalt Joint Seal.
- Air Entraining Agents.
- Curing Compounds.
- Curb and Gutter Sections.
- "PREMOULDED MEMBRANE" Vapor Seal.
- "DURAJOINT" PVC Waterstops.
- "HYDROMAT" Asphalt Liners.

Write today for complete information on the above products plus information about the many other top-quality SEALTIGHT products for highway construction . . . ask for the "PAVING PRODUCTS" Catalog.

W. R. MEADOWS, INC.
13 KIMBALL ST. • ELGIN, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 282

Free Buyer's Guide ON TROWELERS

A few years ago, a troweler was a troweler or a "finisher." —Choice was limited to "big" or "little." Today, there's a wide selection to suit your requirements. *White*, first with retractable wheel trowelers, also makes stationary ring models. Sizes range from 28" to 48". Before you buy, it will pay you to know about the two different types, three different sizes.

White

See all five models at your nearest distributor or write direct for free Buyer's Guide

White Manufacturing Company, Elkhart 9, Indiana

For more facts, use Request Card at page 18 and circle No. 283

New portable crushing and screening plant

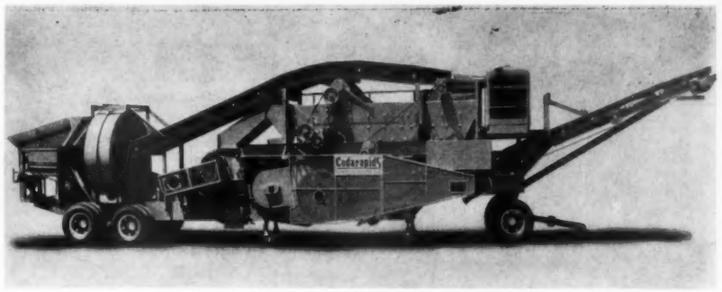
A portable crushing and screening plant that uses a tandem arrangement of a roll crusher and a hammermill for high-capacity secondary reduction is announced by the Iowa Mfg. Co.

Designated Hammeroll, the new Cedarapids plant is primarily a rock plant designed for operations in quarries where abrasive material is not a problem. The capacity of the plant depends upon conditions encountered; in limestone quarries, the unit reportedly will produce from 450 to 500 tph.

In operation, the Hammeroll is similar to other Cedarapids portable tandem plants. With the closed-circuit design, material fed to the 36-inch reciprocating feeder is conveyed to the 4×14-foot triple-deck horizontal vibrating screen, which takes off specification-size material. Large oversize is directed to the hammermill, smaller oversize goes to the roll crusher, and the crushed material is then recirculated to the screen for final sizing.

Screen decks can be arranged to produce up to four finished sizes, including rock, chips, sand, and fines.

For further information write to the Iowa Mfg. Co., Dept. C&E, Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 153.



The new Cedarapids Hammeroll portable secondary crushing and screening plant includes a Cedarapids Model 4033 hammermill, Model 3025 roll crusher, and a 4×14-foot triple-deck horizontal vibrating screen.

Tripod winch capacities range from ¾ to 7½ tons

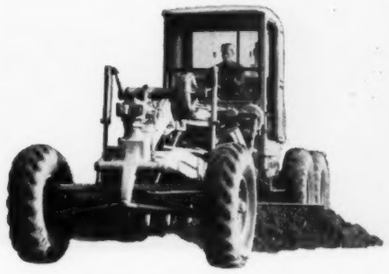
A new line of combination tripod-winches is announced by The Lug-All Co. The units range in capacity from ¾ to 7½ tons; have lifting distances from the ground of 7 feet 2 inches to 23 feet 9 inches; and cable lengths of 26 to 195 feet.

According to the manufacturer,

loads can be safely raised and lowered with the crank in either a high or low gear ratio drive. A direct drive, to save time in operation, is provided for quick take-up or let-out of the cable when not under load. Lug-All tripod-winches are also equipped with a brake lever for lowering loads without using the crank, permitting adjustments of a fraction of an inch.

For further information write to The Lug-All Co., Dept. C&E, 355-E Lancaster Ave., Haverford, Pa., or use the card at page 18. Circle No. 143.

Cat No. 12 Motor Graders!



BEST BUY FOR 20 YEARS—BEST BUY TODAY!

Here's why: When the No. 12 was introduced in 1938, it set new performance standards to become the leader in this type of equipment. Today it *still* is the leader, because Caterpillar has constantly built improvements into it.

Shown here are *some* of the many changes that have been made in the No. 12 to keep it the unquestioned leader. Its exceptional dependability and high resale value are common knowledge. Dollar for dollar, the No. 12 is the most valuable motor grader that you can own.

Compare today's No. 12 with any other motor grader—compare it with older No. 12s, too. By any measure you'll find it has grown in work ability, matched to meet today's exacting construction and road maintenance needs. For complete information about this modern, heavy-duty machine, see your Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

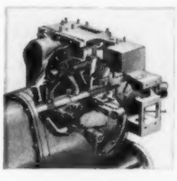
FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES

CATERPILLAR

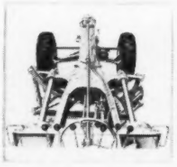
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NO. 12 MOTOR GRADERS—BEST BUY BY ANY YARDSTICK!

Longer main frame adds extra clearance between the toe of the blade and the front tire for all blade positions. There's ample blade maneuvering space whether the No. 12 is equipped with 13.00-24 or 14.00-24 front tires. Curved side shift rack permits fast, easy blade positioning—all common blade positions are available to the operator without leaving the cab.



Exclusive oil clutch, the most advanced clutch design ever offered in a motor grader, provides up to 2,000 hours without adjustment. This is equivalent to about 12 months of "adjustment-free" operation. And because wear rate of clutch facings is so slight, down time for clutch repair is virtually eliminated. The oil clutch accounts for a large part of the No. 12's reputation of dependability.

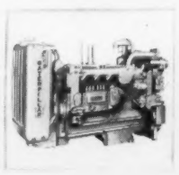


Unequalled visibility results from the No. 12's dash-mounted lift gears and low frame design. While seated, the operator has an unobstructed view of the critical areas at the front wheels, toe of the blade and circle. In-cab starting and easy-to-reach controls are other No. 12 features that help the operator work more efficiently.

Optional Preco Automatic Blade Control, available only on Cat Motor Graders, controls blade slope to an accuracy of within ⅜" in 10', regardless of position of grader. Operator merely dials the required slope on the control, then follows the guide lines. Preco-equipped No. 12s cut conventional grading time as much as 50%.

Improved service life is built into the No. 12 with larger king pins and bushings, larger inboard spindle bearing, new steering arm pivot block with seals, improved steering booster with outboard bearing. No other motor grader can surpass the No. 12 for rugged construction—another important factor in the machine's dependability story.

Mechanical controls, standard on the No. 12, offer positive action, make blade adjustments precise. Powered right from the engine, they give a speed and range of blade movements no other unit can match. More than one lever can be operated at a time, without slowing blade movement. "Anti-creep" braking mechanism makes the blade "stay put" while under load.



Modern heavy-duty Cat No. 12 Engine features, among other advantages, the exclusive Caterpillar fuel injection system. This permits the use of economy-type fuels without fouling. The long-life reputation of Cat Diesels is well known—no other engine can match them for dependability!

For more facts, circle No. 284→

Especially designed for the application of transit-mixed slurry, this sled-type spreader is dragged along by the mixing vehicle, leaving a 9½-foot-wide section of slurry-sealed surface.

Offer sled-type spreader for transit-mixed slurry

A low-sided rectangular sled-type spreader especially designed for the application of slurry seal—a transit-mixed blend of emulsified asphalt, sand, and water—is announced by the Tarrant Mfg. Co.

The free-flowing slurry is dumped into the spreader. As the spreader is pulled along by the mixing vehicle the crack-sealing, depression-filling slurry is squeegeed, or wiped, onto the pavement by a heavy neoprene rubber blade, leaving a 9½-foot-wide section of smooth, skid-resistant surface.

The 10-foot-long, 1½-inch-thick strike-off blade is adjustable to the pavement contour.

The spreader comes equipped with a water sprinkling system, towing chains, tow bar, operator's platform, and a toolbox.

For further information write to the Tarrant Mfg. Co., Dept. C&E, 31 Jumel Place, Saratoga Springs, N. Y., or use the Request Card at page 18. Circle No. 6.

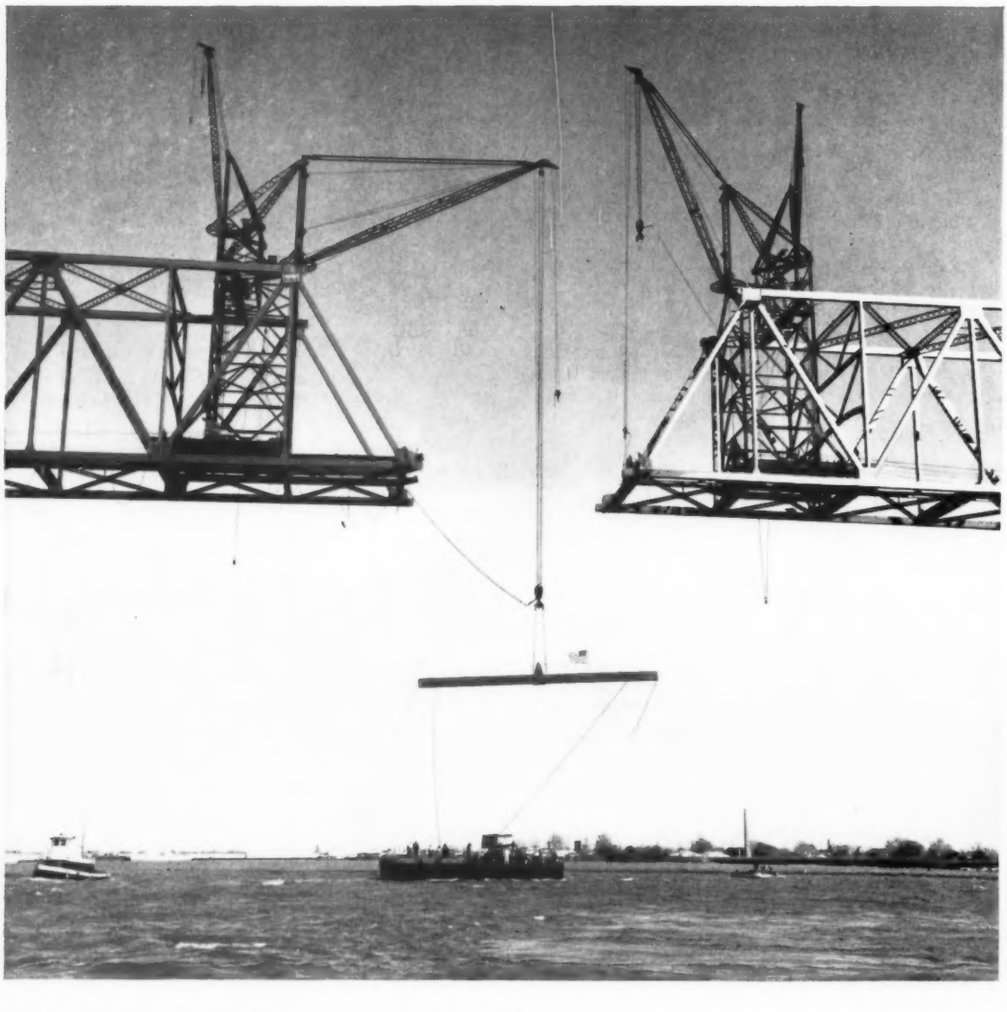
Brushless ac generators offered in several sizes

A complete line of 50, 60, and 400-cycle brushless ac generators is announced by the Kato Engineering Co.

These machines are offered in both single and 3-phase output, with all standard commercial voltages available throughout the range of sizes offered in brush-type alternators. The 60-cycle 3-phase sizes extend from 5 to 400 kw; the 400-cycle from 1 to 250 kw; and the revolving field types in all standard commercial voltages through 600 volts. Some sizes are available in voltages of 2,300 or 4,160 volts.

In addition to increased safety factor and elimination of brush and brush-ring maintenance, the size and weight of the machines are less compared to the conventional-type alternator, according to the manufacturer.

For further information write to the Kato Engineering Co., Dept. C&E, 1415 First Ave., Mankato, Minn., or use the Request Card at page 18. Circle No. 83.



Nation's Longest Cantilever Span at New Orleans. It's said that a downtown bridge across Ol' Man River has been a cherished dream in New Orleans for more than a century. Now they have their bridge, a tremendous structure that links the City of New Orleans with Algiers, on the opposite bank of the Mississippi. Its center span is the longest and perhaps the most spectacular cantilever span in the country.

The picture shown here was taken early in 1958, when the history-making bridge was nearing completion. Scenes like this—with steel rope lifting and maneuvering heavy structural members—were part of the daily drama. Thousands of feet of husky Purple Strand, Bethlehem's finest wire rope, were used to speed the construction work, which at times required lifts of 90 tons or more.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

BETHLEHEM WIRE ROPE
BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 285

MAYO
PNEUMATIC GROUTER
and
"PEA SHOOTER"

Simple to Operate
Highly Efficient

The Mayo Grouter quickly and easily places low-pressure grout in tunnels, mines, shafts, foundations, and subgrades. It also may be used to inject sodium silicate emulsions for stabilizing caving or running ground.

This versatile piece of equipment can readily be converted to a "Pea Shooter" for shooting Pea or "Bird's Eye" gravel back of liner plates and back-packing outside lagging plates.

Write for Free Catalog 13 for full details and specifications.

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

For more facts, circle No. 286

For more data on any item, circle indicated number on card at page 18.

Le Roi's new twin compressor unit, delivering 1,200 cfm of air, is said to be the largest such unit yet marketed.

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE

For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 50 tons.

Write us for name of your nearest distributor

WINSLOW SCALE COMPANY P.O. Box 1198 Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 287

Twin compressor unit delivers 1,200 cfm

Said to be the largest portable rotary air compressor manufactured, the new Le Roi 1200RD2 is rated at 1,200 cfm of free air compressed to 100 cfm.

The unit consists of twin two-stage oil-cooled sliding-vane-type compressors, each powered by a GM 6-71 diesel engine. The mounting consists of a unit-welded steel frame and four 7.50×20, 10-ply tires. Total length is 14½ feet; height is 8 feet; width is 7 feet 11 inches.

The compressors have independent controls and can be operated separately for 600 cfm delivery, and parts are interchangeable with Le Roi 600 rotary compressor parts. Each unit has a 100 per cent capacity control which matches air supply to air demands within a pressure range of 10 psi.

Because of its large capacity, the new compressor is recommended for use on large tunnel jobs, in pile driving, in large-hole quarry drilling, and in other heavy-duty applications.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 3716 W. Wisconsin Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 131.

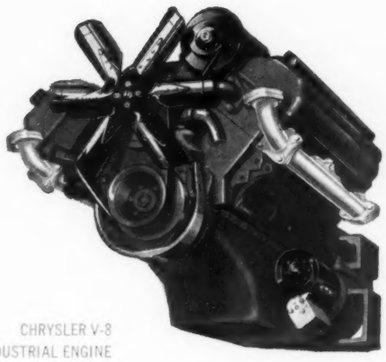
New concrete vibrator is high-speed unit

Powered by a 5-hp Wisconsin engine with throttle control and centrifugal clutch, the Empire Corp.'s new Model AKS concrete vibrator provides 9,000 vibrations per minute.

The unit's two sizes of vibrator heads are of all-steel construction, are lifetime lubricated, and are sealed against moisture and dirt. The improved flexible cable is reversible, and features a simplified plug-in design for attaching engine, vibrator head, or coupling. The wheelbarrow carrying frame now pivots with the engine, thereby eliminating all interference with the flexible shaft.

For further information write to the Empire Corp., Dept. C&E, 1566 S. 83rd St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 67.

why Yale & Towne powers with Chrysler Industrial Engines



CHRYSLER V-8 INDUSTRIAL ENGINE powers Yale G3P Lift Truck.

Lift trucks operate under a wide variety of rugged conditions. The Yale Model G3P, for example, usually works outdoors in all kinds of weather and, frequently, over rough terrain. The engine is exposed to rain, dust, dirt; extreme heat and cold. Demands upon the engine vary from short periods of full capacity lifting to long periods of idling. Yale & Towne has found that Chrysler engines meet these on-the-job requirements with power to spare. Most Yale customers are familiar with Chrysler power in other industrial applications. They respect the reputation of Chrysler Industrial Engines for economical and trouble-free performance. They know from first hand experience how Chrysler's nationwide service organization helps reduce down-time losses.

YALE & TOWNE EXECUTIVES

John A. Baldinger (left), Vice President, Yale Materials Handling Division; Thomas W. Curtin (right), Director of Purchases; Clyde R. Dean (seated), General Sales Manager. Yale Lift Trucks from 3,000 to 10,000 lb. capacity are powered by six-cylinder Chrysler Industrial Engines. Larger models (shown: Model G3P, 18,000 lb. capacity) are powered by Chrysler V-8 Industrial Engines with fluid coupling.

SEND for 1958 CHRYSLER INDUSTRIAL ENGINE CATALOG: Dept. F7, Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

Chrysler INDUSTRIAL ENGINES

INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

For more facts, use Request Card at page 18 and circle No. 288

Motor-in-head design featured in new vibrator

A new 60-cycle motor-in-head vibrator is announced by the Stow Mfg. Co.

Designated Model YU, the unit consists of a 2⅝-inch vibrator head containing a universal motor; a casing which acts as a handle; a completely covered off-on switch 7 feet from the head; and a 25-foot electric cable that plugs into regular ac or dc 115-volt current.

The YU is available in casing lengths of 7, 14, or 21 feet.

The universal motor powers the head at 12,000 to 15,000 vibrations per minute. Thermal overload protection shuts off the motor in case of destructive heat or overload.

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the card at page 18. Circle No. 151.

Standard truck tire has nylon construction

A standard line of truck tires with nylon cord construction is offered by The General Tire & Rubber Co.

Designated Traction Rib Special Service, the tire's nylon construction reportedly gives greater tire body strength, and increases recap miles.

For truck, tractor, and trailer use, the tire comes in twin bead sizes.

For further information write to The General Tire & Rubber Co., Dept. C&E, 1708 E. Market St., Akron, Ohio, or use the Request Card at page 18. Circle No. 47.

New aluminum bucket permits bigger payloads

Aluminum power-crane clamshell buckets in sizes of 3 to 10-cubic-yard capacity are offered by The Owen Bucket Co. The use of alloy aluminum in side and bottom bowl plates is said to eliminate up to 1,000 pounds of dead weight, depending upon the size of the bucket.

Other design features include tandem positioning of the lower closing sheaves, which permits the closing line lead to function in the center plane of the bucket. This center-line reeving eliminates bending of the cable at the guide rollers as the bucket is hoisted, thus extending the life of the cable.

Cutting edges, corners, and other surfaces exposed to rough treatment are made of steel.

For further information write to The Owen Bucket Co., Dept. C&E, 6001 Breakwater Ave., Cleveland 2, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 11.

International® FleetM

S. J. Groves & Sons

The Groves' pattern for high-speed earthmoving: two heaped "75" Payscraper units streaking toward the fill; two more loading fast in the cut with TD-24 full-power push-loading assistance, and another pair coming into the cut for quick pick-ups.

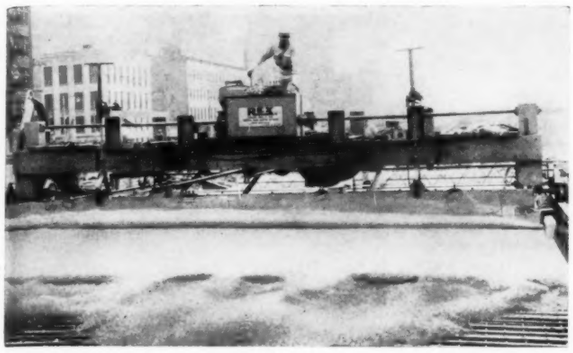
D. H. Groves, vice president and project manager, is double-shifting earthmoving operations, shooting for contract completion before Labor Day.

International®

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois

Construction Equipment

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.



The Rex concrete-bridge finishing machine is adjustable both in elevation of the large screed and in frame width. The unit can be converted to a standard road finisher with minimum labor.

Concrete-bridge finisher is tailored to spex

A concrete-bridge finishing machine said to incorporate all the design and construction features of the standard Rex concrete-road finisher is available on a made-to-order basis from the Chain Belt Co.

The unit is adjustable both in elevation of the large screed and in frame width. One machine, the company reports, can take care of most width requirements.

Other features include a hydraulic transportation rig complete with pneumatic-tire wheels, hydraulic lifting pedestal, and a hinged towing tongue for fast and efficient movement from job site to job site.

According to the manufacturer, the bridge finishing machine can be converted into a standard road finisher with a minimum of labor.

For further information write to the Chain Belt Co., Dept. C&E, 47-1 W. Greenfield Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 99.

etMaking Dirt Fly for nson Wisconsin #94

Along 40 miles of Wisconsin Interstate Highway #94 between Menomonie and Hudson, high-speed earthmovers are making the grade for what will ultimately be part of the Chicago-Twin Cities freeway.

In St. Croix County, S. J. Groves & Sons Co., Minneapolis, is highballing a 2.92-mile stretch on a $416,000 prime contract for grading, drainage, and sub-base with more than 70% International equipment. Groves' "75" Payscraper fleet, push-loaded by TD-24 Torque Converter crawlers, is moving 605,000 cu yd of unclassified excavation and 115,000 cu yd of borrow on 1,900-ft average hauls.

Twenty-cu-yd loads of Wisconsin clay are packed into "75" Payscraper bowls by TD-24 pushers that shorten the loading cycle from contact to kick-out. The TD-24 foot-operated engine decelerator makes "feather-touch" pusher contact possible. Exclusive TD-24 Planetary Hi-Lo range power-shifting supplies full power in the cut and speeds scraper kick-outs a gear higher in many cases. And TD-24 pushers save additional cycle time by using exclusive Planet Power steering for faster repositioning and scraper pick-ups.

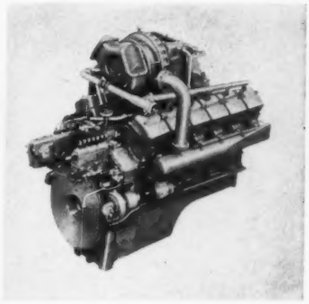
Payscraper power gets the rigs in and out of cuts fast, provides travel speeds up to 24 mph that rolls paydirt to fills in shorter cycle times. High power-to-weight ratio, load-heaping bowl design, exclusive Hydro-Steer—all help give the Payscraper production-boosting operating ease and safety.

Prove to yourself that an all-International matched scraper-crawler fleet is your best bet to back up your low bids. See how International Payscraper units help get the job done faster at less cost. See how International TD-24 Planet Power steering gives you pusher performance unmatched on your pans. See your International Construction Equipment Distributor for an on-the-job demonstration!

For more facts, use Request Card at page 18 and circle No. 289

Offer German-built diesel in 625 to 1,025-hp range

The Utica Division of the Curtiss-Wright Corp. announces the availability in the United States of the MB 820Bb Mercedes-Benz diesel engine. The engine is offered in the 625 to 1,025-hp range, from 1,000 to 1,500 rpm.



The MB 820Bb is a 12-cylinder, V-type, vertical, 4-cycle, liquid-cooled turbocharged engine, with a compression ratio of 16 to 1. It weighs 6,116 pounds, with over-all dimensions of 94½ inches long, 53 inches wide, and 77 inches high.

The unit reportedly is suitable for generator sets, large pumps, and heavy-construction machinery.

For further information write to the Curtiss-Wright Corp., Utica Division, Dept. C&E, Utica, Mich., or use the Request Card at page 18. Circle No. 142.

Portable arc welder offers 25 to 250 amps

Brennen, Bucci & Weber, Inc., announces the Model 250C Bren-Weld hand portable arc welder, featuring twist-of-the-wrist current control.

The welder has an output range from 25 to 250 amps. The high open circuit permits the use of any ac welding electrodes from 1/16 inch to 3/16 inch. According to the company, the Model 250C will weld material from sheet metal up to 2-inch-thick steel. The unit weighs 112 pounds and measures 12×13×15½ inches.

For further information write to Brennen, Bucci & Weber, Inc., Dept. C&E, 262 Mott St., New York 12, N. Y., or use the Request Card at page 18. Circle No. 46.

For more facts on these products, circle the indicated number on the Request Card that is bound in at page 18.

YES! YOU CAN BUY DIRECT
SEND US YOUR ORDERS FOR
NEW ROTARY SWEEPER BROOM CORES

WE MANUFACTURE ALL SIZES

SUGGESTION—To faraway users. Order cores only without fibres but ready to fill.

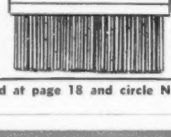
• Detroit Harvester • Fordson • Grace (3 types) • Hough • Huber • Lull
$69.50 UP.
• Littleford • Little Giant • Meill-Blumberg (M-B) • Rosco • Spearswell • Tampo
And many others

Also Cores Made to Your Specifications

KENNEDY'S
VAN BRUSH MFG. CO. INC.
SINCE 1929
527 S. West Blvd., Kansas City, Mo.

Road Builders — it's sensational!
BIG PECKERWOOD BIG
C-O-N-T-I-N-U-O-U-S
Drag Broom Levelers with Spring Steel Wires or Bass Fibres six inches wide and lengths to 12 feet, and also one three inches wide. No frame required.

Also furnished filled with Palmyra-Hickory or Bass Fibres or even Spring Steel Wires.
WE SHIP WORLDWIDE—IMMEDIATELY
In stock — ONLY $3.50 FOOT
Length 4', 6', 8', or 12'. Wt. approx. 5½ lb. (foot)



THE LITTLE PECKERWOOD
3" wide, 15" long, with two bolts, fits your present frame.
ONLY $2.50 EACH

For more facts, use Request Card at page 18 and circle No. 290

Designed to withstand wind loads in excess of 120 mph, the Gar Wood fiberglass highway structures are said to have a strength-weight ratio higher than that of similar structures.

Highway-sign structures have high strength

A fiberglass structure designed to suspend highway directional signs on overhead spans is announced by Gar Wood Industries, Inc.

Said to weigh less than aluminum, yet surpass lightweight metal structures in strength and weatherability, the spans are available in widths from 40 to 80 feet in 5-foot increments. According to the manufacturer, they can withstand wind loads in excess of 120 mph. Couplings and fittings which hold all tubular members in place are of molded or cast fiberglass.

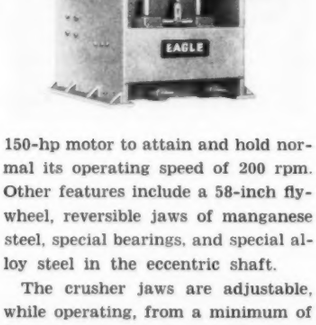
For further information write to Gar Wood Industries, Inc., Fiberglass Division, Dept. C&E, 800 Lowell St., Ypsilanti, Mich., or use the Request Card that is bound in at page 18. Circle No. 55.

Jaw crusher rated at 125 to 400 tph

A jaw crusher with a 30×42-inch feed opening, and capable of serving in many cases as a primary crusher, is offered by the Eagle Crusher Co.

Rated capacity is 125 to 400 tph. Over-all weight of the crusher alone is 55,000 pounds.

The unit is said to require a 125 to



150-hp motor to attain and hold normal its operating speed of 200 rpm. Other features include a 58-inch flywheel, reversible jaws of manganese steel, special bearings, and special alloy steel in the eccentric shaft.

The crusher jaws are adjustable, while operating, from a minimum of ½ inch to a maximum of 8 inches.

For further information write to the Eagle Crusher Co., Dept. C&E, 124 N. Washington St., Galion, Ohio, or use the Request Card at page 18. Circle No. 157.

THE ALL-NEW WIDE-BASE
GENERAL LCM
with NYGEN®

THE GENERAL TRUCK TIRE . . . your on-the-spot answer to lower operating costs!

built with exclusive NYGEN cord for matchless strength
designed to provide crawler-like flotation and traction
minimum rolling resistance in all kinds of going
precision engineered to reduce operating costs

To keep your rigs moving right on schedule on any job, in any weather, depend on tougher, stronger wide-base General L. C. M. Truck Tires. Featuring General's exclusive stronger-than-steel Nygen Cord, the rugged L. C. M. delivers crawler-like traction and flotation consistently to drive costs downward . . . profits upward.

Specify GENERALS *on your new equipment*

THE GENERAL TIRE & RUBBER COMPANY · AKRON, O.

For more facts, use Request Card at page 18 and circle No. 291

New compactor doubles as off-highway hauler

Ballast can be lightened or completely emptied in seconds in the new model of the Duo-Pactor announced by the Seaman-Gunnison Corp. A dump-type ballast box, which eliminates the need for removal of ballast by clamshell or hand-shoveling, also allows the unit to serve as an 8 to 12-cubic-yard off-highway hauler.

According to the manufacturer, the new unit will carry 32,000 to 40,000 pounds of ballast or payload.

As a compactor, the Duo-Pactor's rubber rolls are used to make the first pass or two. The steel roll can then be lowered to a level even with the bottoms of the ruts formed by the tires. High unit pressure from the steel roll forces the ridged material down between the tire ruts to produce uniform compaction.

The unit can be used to transport a variety of materials and, since the load is distributed evenly over 8 rear wheels, it will not damage haul roads or soft fills, the company reports. It is powered by a heavy-duty, 88-hp International tractor, modified as a 2-wheel prime mover.

For further information write to the Seaman-Gunnison Corp., Dept. C&E, 2763 S. 27th St., Milwaukee 15, Wis., or use the Request Card at page 18. Circle No. 4.

This Seaman-Gunnison Duo-Pactor has a dump-type ballast box to speed lightening or emptying of ballast. The unit can also be used as an off-highway hauler with an 8 to 12-cubic-yard capacity.

Air-operated chain hoist is lightweight, powerful

A 1,000-pound-capacity, air-operated chain hoist that weighs only 30 pounds and raises ½-ton loads at a rate of 50 fpm is announced by the Thor Power Tool Co.

Designated Model H-1000, the unit is powered by a reversible 8-blade air

motor. The hoist is capable of lowering rates up to 96 fpm under maximum load, according to the manufacturer. Sensitive throttle control permits accurate spotting of loads, as well as infinite graduation of load-lifting or lowering rate from crawl to maximum speed.

The Thor H-1000 is available with two types of throttle control, with roller or link chains, and with hook or trolley mounting.

For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 141.

For more facts, circle No. 292→

PAYHAULER FLEET

whips 17% grade with bonus loads

The Caldwell Engineers' five-unit 65 Payhauler® fleet highballs 2,500 cu yd of shot rock 1,000 feet daily up a haul road with 17% average grade. That's how this subcontractor keeps on schedule! His contract calls for excavating and crushing 165,000 tons of rock on the $13,000,000 hydro and flood control Oliver Dam under construction at Columbus, Ga.

Making the 17% grade with bonus loads is routine for the Payhauler fleet on this newest of all dams being built by the Georgia Power Co. at Columbus.

"These are crooked haul roads," reports excavation foreman Dudley Rabb, "but our Payhauler fleet is whipping them to keep us on schedule. The rigs haul through axle-deep water 50% of the time...make pull-outs up roads that rise 170 feet in 1,000 feet...yet speed bonus loads to crusher and stockpile."

Prove the get-away surge, and up to 25% faster haul speed of an International Payhauler—the result of bonus turbo-charged diesel power; road-matched and load-matched gear choice; and the power-cushioning leverage of planetary drive axles.

See how a Payhauler shortens the cycle with pick-up truck spotting ease. Discover how exclusive high reverse, zip-around power steering, and grade-beating power boost your profits. Try split-second dumping with the double-acting hydraulic hoist. Measure the advantage of Payhauler operating ease, and downgrade safety of positive Torqmatic braking! See your International Equipment Distributor for a demonstration!

International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

For use with tractors with a minimum of 70 horsepower, this DT Fullpak scraper is nearly 29 feet long, yet requires less than 26 feet of space to make a complete 180-degree turn.

Tractor-drawn scraper has 11½-yard capacity

The LeTourneau-Westinghouse Co. announces a new 11½-cubic-yard scraper for use with tractors of 70 horsepower or more. Designated Model DT Fullpak, the machine is said to have the same design features and operational characteristics as the previous Fullpak models.

The DT's 8-foot 4-inch three-section blade is angled precisely with the floor of the bowl to reduce loading resistance. The scraper's rear wheels are set well within blade width for maximum control in making accurate cuts.

On the spread, the apron swings up to provide a 5-foot-high opening for quick discharge. Although its over-all length is nearly 29 feet, this scraper requires less than 26 feet of space to make a complete 180-degree turn.

Standard tire equipment on the DT is listed as 16.00×20, 16-ply tubeless tires with free rolling tread.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria 2, Ill., or use the Request Card at page 18. Circle No. 88.

Announce new trencher with optional sod cutter

The Charles Machine Works, Inc., announces its Model M-2 Ditch Witch trencher.

Features include a new 8-inch width of cut with a 30-inch trenching depth. Other widths and depths include 6×36-inch, 4½×36-inch, and 3×48-inch. A new speed reduction unit with Select-O-Matic shift from digging speed to mobile speed provides four speeds forward and reverse.

Among the optional features available is a sod-cutting attachment. This unit reportedly can be mounted on the trencher in minutes, and cuts an 8-inch sod strip at speeds up to 40 fpm. After trenching and backfilling, the sod can be replaced.

For further information write to The Charles Machine Works, Inc., Dept. C&E, 625 Birch St., Perry, Okla., or use the Request Card at page 18. Circle No. 41.

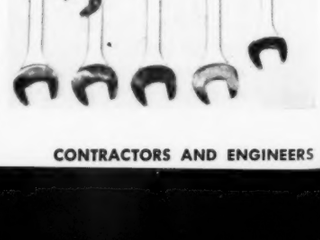
Big combination wrenches available in 6 new sizes

Six new large-size combination wrenches are available from the Owatonna Tool Co.

The wrenches are offered in the following sizes: 1⅝, 1 11/16, 1¾, 1 13/16, 1⅞, and 2 inches. Both the open-end and box-end are at a 15-degree angle to the handle.

Sizes of OTC combination wrenches now range from 5/16 inch through 2 inches.

For further information write to the Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 136.



LOW COST HIAB 170 PROVES VERSATILE TRUCK CRANE FOR C. W. McGRATH ORGANIZATION

A one-man operated, fully hydraulic HIAB 170 TRUCK CRANE is the all-around maintenance work elephant for the C. W. McGrath organization of San Diego, California. General Superintendent John "Steve" Stephenson reports: "The HIAB 170 is one of those pieces of equipment you feel you don't need until you have it—and then you wonder how you managed without it."

In addition to his general engineering contracting firm, progressive C. W. McGrath operates a trucking company, a building materials supply house, and an equipment rental service. The organizations boast a spread of over 100 pieces of major construction and allied machinery.

Under highly competitive conditions, C. W. McGrath keeps ahead of the field by handling 100% of his own service and maintenance work with skilled mechanics and top repair equipment. This equipment emphasizes versatility and mobility, because many repairs are made right in the field.

McGrath servicemen who tackle engine and transmission work, track and tire replacement, and similar heavy chores, easily handle the heavyweight components with the HIAB 170 TRUCK CRANE. A key tool in the firms activities, the HIAB 170 is also utilized for moving pumps, stand pipes, meters, placing pipe, and a wide variety of other materials handling tasks.

Mr. Stephenson continues: "Every day we find another use for the HIAB. It is tremendously valuable to us, and is the best possible tool of its kind we could have obtained."

Equipment Superintendent Charles Knauss states: "This really speeds up our maintenance and handling work, and makes both a lot easier. With the HIAB 170, one man can do jobs that formerly took a whole crew, and do them in less time. It's really great."

The fully hydraulic, one-man operated HIAB 170 is an ideal Contractors' utility tool. It offers a range of lifting capacities from 6000 pounds on the shortened boom of 5 feet to 2500 pounds on a full boom of 13 feet. The boom length is easily adjustable through hydraulic control. The HIAB 170 will lift up to 20 feet above ground level at a maximum speed of 20 inches per second. Control is from either side of the truck cab. Crane action is positive and accurate, with 200° or 360° swing arc. When not in use, the HIAB 170 folds snugly behind the cab, taking only 15" of space. THIS LEAVES THE ENTIRE TRUCK BED OPEN FOR LOAD. Hydraulic outriggers to handle heavy loads are standard equipment.

WRITE OR PHONE FOR COMPLETE INFORMATION

Stanco MFGS. & SALES INC.
1666 Ninth St. (Corner of Olympic & Ninth)
Santa Monica, California

For more facts, circle No. 293

ALL NEW! GOOD ROADS "ODELL" SPREADER

...for asphalt and aggregate spreads up to 8-inch depths

Operated by only two men, contractors report savings up to 50% on average jobs with the "Odell". Spreads asphalt, gravel, coarse slag or stone, limestone, cinders, and other base material (up to 4" in diameter) to 8" in depth. Adjustable for spread widths up to 10 feet.

Accurate spread depth is controlled by the exclusive "floating" strike-off bar with new crown adjustment, mounted on runners independent of the roller and hopper.

Can be hitched to practically any standard size or model dump truck in seconds. For further information write:

GOOD ROADS MACHINERY Corp.
MINERVA, OHIO

For more facts, circle No. 294

THE MORSE-STARRETT WIRE ROPE CUTTER

Cutting capacities up to 1 inch, 1-1/16 inch, and 1-1/2 inch.

FAST
Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY
Anyone can operate it. The hammer principle eliminates any special skill requirements.

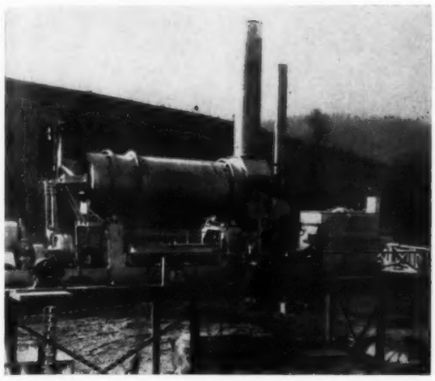
SAFE
The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE
Models for tool kit or stationary operation. Made in three sizes.

SEE YOUR DEALER OR WRITE TO
MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE OAKLAND 1, CALIFORNIA

For more facts, circle No. 295

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.



The White Model L-20 portable asphalt plant incorporates an extra-large dryer—52 inches×12 feet—and an oversized blower-burner combination to insure high production even with wet aggregate.

Portable asphalt plant produces 20 to 25 tph

A new improved 20 to 25-tph portable asphalt plant, featuring a 52-inch × 12-foot dryer and an oversized blower-burner combination, is available from the White Mfg. Co.

Designated Model L-20, the entire plant except for the feeder bin is mounted on one frame for easy portability, and is available without wheels for stationary installation.

All of the control gates are air-operated, and the plant is powered by one engine.

The White Model L-20 is equipped with either twin or single-axle pugmixer, with weigh scales offered optionally for aggregate and bitumen.

For further information write to the White Mfg. Co., Dept. C&E, 1227 W. Beardsley Ave., Elkhart, Ind., or use the Request Card at page 18. Circle No. 30.

Dowel basket assemblies for joint forming

Dowel basket assemblies for concrete-highway construction are available from The Dayton Sure-Grip & Shore Co.

These heavy-duty units, for use with any thickness of slab, are offered in three basic types: expansion joint; impressed contraction joint; and sawed contraction joint.

With the exception of the expansion core or impression plate, the units are completely assembled at the plant.

For further information write to The Dayton Sure-Grip & Shore Co., Dept. C&E, 304 Kercher St., Miamisburg, Ohio, or use the Request Card at page 18. Circle No. 102.

SWENSON SPREADERS
Speed Sealcoating!
Spreads Salt or Chloride for DUST CONTROL or SOIL STABILIZATION
write for complete information
SWENSON SPREADER & MFG. CO.
Lindenwood, Illinois

For more facts, use Request Card at page 18 and circle No. 296

A smart hunter knows this sign means deer...

A smart bearing buyer knows this sign means value...

TIMKEN®

SMART bearing buyers know the trade-mark "Timken" on a product means they get the greatest value for their money. It's a registered trade-mark identifying tapered roller bearings, fine alloy steel bars, seamless steel tubing and removable rock bits, products that are made by The Timken Roller Bearing Company.

And the name "Timken" stands for highest quality. Quality that industry knows and wants. Quality with a backing of 59 years' experience, safeguarded at every step from melt of steel to finished product.

It will pay you to remember that "Timken" is a trade-mark, not just a type of product. If you're looking for the best, look for the trade-mark "Timken". It's your assurance of getting the highest value. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TAPERED ROLLER BEARINGS • REMOVABLE ROCK BITS • FINE ALLOY STEEL

For more facts, use Request Card at page 18 and circle No. 297

The Ulrich Model T-40 trench filler and shoulder spreader is designed for attaching to Caterpillar motor graders. Its angling strike-off blade can be adjusted to spread from 1 to 10 feet wide.

Motor-grader attachment has dual application

An attachment for Caterpillar motor graders, designed specifically for the filling of road-widening trenches and spreading of shoulder material, is announced by the Ulrich Mfg. Co.

Designated Model T-40, the unit is equipped with an angling strike-off blade which can be adjusted to spread from 1 to 10 feet wide.

Spreading depth is independently power-controlled on both ends of the strike-off: the pavement end is raised or lowered with a double-acting hydraulic cylinder, the outer end with the grader-blade lift mechanism. The strike-off blade can be set at any point 16 inches below, or 8 inches above, the pavement.

The hopper is all electric-welded from high-tensile steel, and the torque-tube and box-section main frame is an integral part of the hopper. As trucks dump their loads, the dump apron can be raised or lowered hydraulically to match the height of the truck.

For further information write to the Ulrich Mfg. Co., Dept. C&E, 1042 W. Grand Ave., Roanoke, Ill., or use the Request Card at page 18. Circle No. 178.

For more data on any item, circle indicated number on card at page 18.

Anchor-bolt fitting stays flush with floor

An anchor-bolt fitting, that remains flush with the floor until the actual installation of equipment or column, is available from the Decatur Engineering Co.

The new fitting contains an oblong nut, movable in all directions to compensate for the usual error in setting anchor bolts. The machine or column is attached to the fitting by means of a stud of the desired length, thus eliminating the hoisting and lowering of machines over a fixed bolt by the trial-and-error method.

Said to be no more difficult to install than conventional anchor bolts, the units are offered as fittings only, or complete with anchor bolt and stud. They are available in sizes from $\frac{3}{8}$ to $1\frac{1}{2}$-inch bolt diameters in $\frac{1}{8}$-inch increments.

For further information write to the Decatur Engineering Co., Dept. C&E, 519 E. William St., Decatur, Ill., or use the Request Card at page 18. Circle No. 13.

Another Winning Combination

...Famous GALION ROLL-O-MATIC* TORQUE CONVERTER DRIVE Rollers

Galion "Chief" 3-Wheel Roller with Continental Gasoline or Cushioned Power* Diesel Engine.

...and CONTINENTAL RED SEAL POWER

They're paying their way, with plenty to spare, on road jobs the country over, these rugged Galion rollers with Continental Red Seal—Diesel or gasoline. Galion Roll-O-Matic Torque Converter Drive not only cuts fuel consumption as much as 25 per cent, but greatly lengthens life of engine and power-transmitting parts. Whether the going is uphill, downhill, or on the level, oil in motion *automatically* matches the driving force to the need. User satisfaction with Galions underscores the familiar statement:

"ANY EQUIPMENT IS BETTER
WITH DEPENDABLE RED SEAL POWER."

*TM REG.

WORLD'S LEADING INDEPENDENT MANUFACTURER OF INTERNAL COMBUSTION ENGINES, CONTINENTAL MOTORS OPERATES PLANTS IN ATLANTA, DALLAS, DETROIT, MILWAUKEE, MUSKEGON, AND TOLEDO, AND IN ST. THOMAS, ONT., PRODUCING AIR-COOLED AND LIQUID-COOLED ENGINES FOR USE ON LAND, AT SEA AND IN THE AIR.

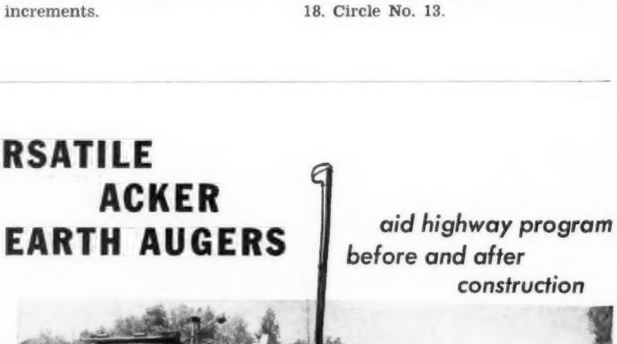
Continental Motors Corporation

MUSKEGON • MICHIGAN

For more facts, use Request Card at page 18 and circle No. 298

VERSATILE ACKER EARTH AUGERS

aid highway program before and after construction



The Acker AP Earth Auger is the highway construction man's most versatile friend.

BEFORE CONSTRUCTION, it "doubles-in-brass" with dependable, accurate soil sampling of sub-surface conditions. This it accomplishes with large diameter or continuous flight augers. For deeper sampling, the Acker Earth Auger speedily converts into a core drill for *inexpensive shot core* or diamond core drilling.

AFTER CONSTRUCTION, it speedily digs holes for setting guard rails, highway signs, light poles, etc. Or, used as a shot core drill the Acker Earth Auger will obtain clean, unbroken highway test cores.

So, whether or not it's used *before* or *after* construction it will pay you to investigate the versatility of the Acker AP Earth Auger.

Please write for Bulletin **40 C&E.**

See Acker Versatility in your own office—write us about our 16mm sound motion picture in full color which will be loaned free of charge to interested parties.

ACKER DRILL CO., Inc.

P.O. BOX 830 • SCRANTON, PA.

Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

For more facts, use Request Card at page 18 and circle No. 299

Six interchangeable buckets give the Model T-18 Trojan tractor shovel a carrying-capacity range of from 14 to 29 cubic feet. The multipurpose machine is said to be especially suited to meet the requirements of the producers and users of bulk materials. The T-18's 4-foot wheelbase and 117-inch over-all length give it the ability to work in areas with a minimum amount of operating space. For further information write to the **Yale & Towne Mfg. Co.**, Contractors Machinery Division, Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 104.

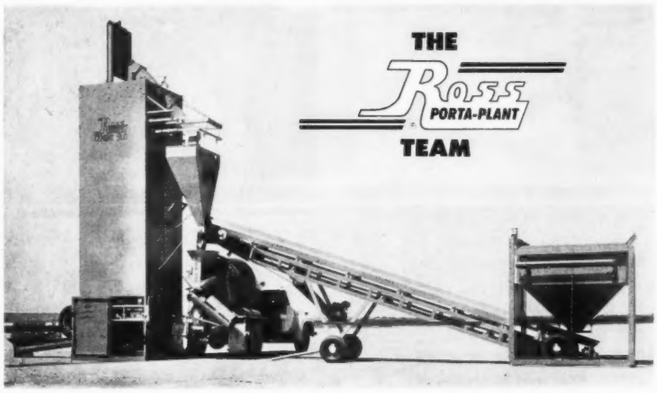
Offer tilt-type trailer for light-duty hauling

A 1-ton-capacity tilt-type trailer is available from The General Engines Co.

Designed with a low center of gravity to prevent side sway, the trailer is mounted on a highway carriage with 670×15 pneumatic tires, and can be easily and quickly attached to a car or a pickup truck. Its over-all length of 12 feet 1 inch provides a 4×8-foot load area.

For further information write to The General Engines Co., Dept. C&E, Route 130, Thorofare, N. J., or use the Request Card at page 18. Circle No. 69.

HIGH PRODUCTION...



THE ROSS PORTA-PLANT TEAM . . . Fast, efficient, and economical. **HIGH PRODUCTION AT LOW INITIAL COST.** Profits and savings begin twenty minutes after arrival at job site. Easily transported . . . easily set-up . . . easily operated. The entire operation can be operated by one or two men with ease.

The 3½ and 6-yard plant is highly maneuverable. Powered by a 9-hp., air-cooled gasoline engine with a reduction gear, the engine is mounted for easy access for starting and servicing. The belt-fed conveyor system is of a sealed troughing and return carrier design, consisting of 24" 4-ply belt with housing.

The easy-access bin is of 3/16" heavy-gauge steel that locks for traveling. The bin is only 7'6" high (3½-yard model) and 9'0" (6-yard model) allowing perfect feeding from any front-end loader. The scales are Cardinal 3 beam, 10,000#, 8,000#, and 3,000# on the 3½-yard model and 14,000#, 10,000#, and 10,000# on the 6-yard model; each with an over and under indicator, allowing full visibility to the operator at all times.

The plant is easily moved at normal road speeds with any ½-ton pick-up. This, plus trouble-free service makes it AMERICA'S MOST IMITATED PORTABLE BATCHING PLANT . . . investigate the pace setter!

The independent bulk cement plant is a highly portable element that can be towed at normal road speeds by a standard truck tractor. The plant has a 220-barrel capacity and is adapted to any situation where bulk cement is desired.

Featured in the design is a cement hopper that falls into place when the unit is raised into operating position, saving time and cost of transporting a separate hopper unit.

Power is supplied by a 30-hp. gasoline engine to a 9-inch screw system capable of loading and elevating over 150 barrels per hour. The loading hopper has a 10-foot extension to accommodate dump trucks or rail cars.

The unit which weighs 13,500 pounds empty, has a traveling length of 31½ feet. It is 7 feet wide, and 12 feet, 4 inches high.

LOW INITIAL COST...

Here is America's most imitated portable batching team at low initial cost . . . here is high production and trouble-free service. Some producers state that they PAY FOR THE PLANT WITH THE SAVINGS FROM THE FIRST JOB! Start your savings twenty minutes after arrival at job site! Be sure . . . buy the sure team. Investigate the pace setter . . . Engineered for economy . . . Designed for durability . . . Built for better service!

CONTACT US FOR THE NAME OF THE DEALER NEAREST YOU

ROSS PORTA-PLANT

Box 446 Phone 2697 Brownwood, Texas

Exclusive Export Representative: P. J. Wolfson Co., Inc., 150 Broadway, New York 38, New York

For more facts, use Request Card at page 18 and circle No. 300

BIGGER PAY LOADS

with aluminum OWEN buckets

The combination of alloy aluminum plate with steel in the bowl construction of material handling buckets . . . 2½ cubic yards and over, eliminates up to 1000 pounds of dead weight. This affords a like amount of increase in pay load when rehandling comparatively light, free-flowing materials.

The exclusive feature of the closing line lead in the center plane of the bucket eliminates sharp bends at the guide sheaves and rollers, thereby increasing the life of the closing cable from 75% to 100%.

Long, internal main-shaft bearings insure permanent jaw alignment with minimum wear. Write for further details.

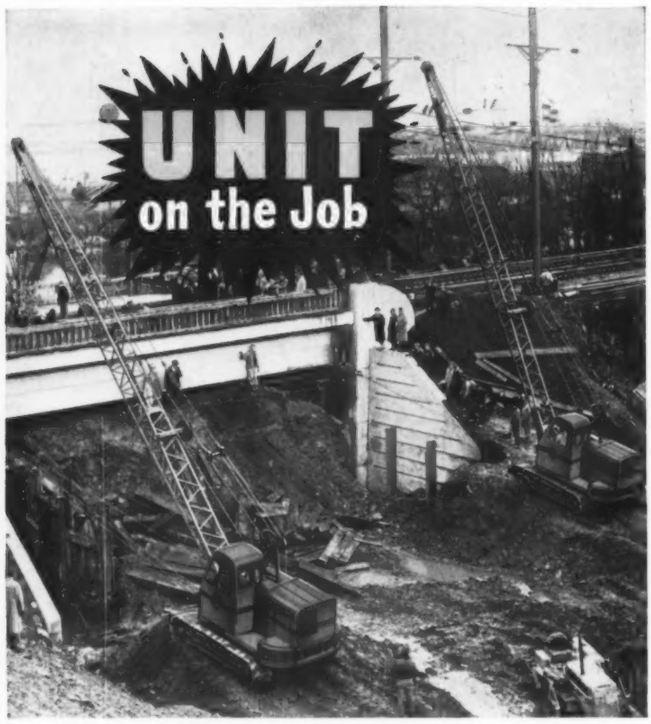
The OWEN BUCKET Co.

BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Request Card at page 18 and circle No. 301

One in a new line of mobile hoppers is this 10-cubic-yard unit feeding onto a belt conveyor with a discharge height of 9 feet. Over-all height of the unit is 10 feet 9 inches; width is 8 feet; and length is 27 feet. The truck frame is 17 feet long. For further information write to **Lippmann Engineering Works, Inc.,** Dept. C&E, 4603 W. Mitchell St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 106.



TEAMWORK and Accurate Control

Working as a team, these two UNIT 1020 Cranes moved a 500 TON railroad bridge from its temporary mounting to the new structure in a period of thirteen (13) minutes. This type of job calls for smooth and accurate control of boom and hoist line operation. UNIT'S extra long crawlers, multiple-hinged shoes, wide axles, and hook rollers provide perfect balance and stability. This, together with the FULL VISION CAB for complete visibility, makes UNIT the machine that is dependable and safe to handle efficiently any type of heavy-duty work.

SEE FOR YOURSELF: *Let us send you our novel TV Brochure. It illustrates the complete UNIT line.*

UNIT CRANE & SHOVEL CORPORATION
6309 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

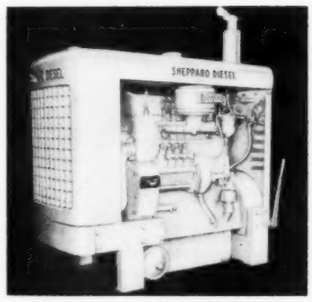
UNIT

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

For more facts, use Request Card at page 18 and circle No. 302

New 100-hp engine added to diesel line



A new improved 100-hp diesel engine is announced by the R. H. Sheppard Co., Inc.

Designated Model 16B, the unit features improved fuel injection and combustion, said to result in an extremely low weight-to-power ratio.

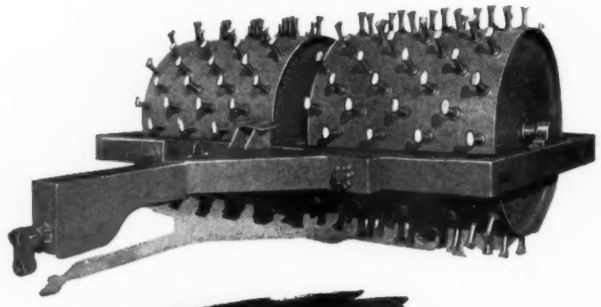
The engine reportedly is smooth and clean-running, operating with a clear exhaust from no load to full load. Replaceable wet-type liners, main bearings between each throw and at both ends of the crankshaft, and full pressure lubrication with full-flow filtration are among the many other features incorporated in this power plant.

For further information write to the R. H. Sheppard Co., Inc., Dept. C&E, 47 Middle St., Hanover, Pa., or use the Request Card at page 18. Circle No. 148.

Announce vertical file for single large sheets

The Plan Hold Corp. announces a new vertical file for single large sheets such as blueprints, drawings, plans, and maps. Each sheet is filed individually, and hangs flat and free from wrinkles or creases, ready for instant identification and use.

This new file consists of a wall-mounted bracket said to accommodate up to 150 aluminum hangers. By attaching Plan Hold tubular tape to the sheet, it is easily slipped on or off

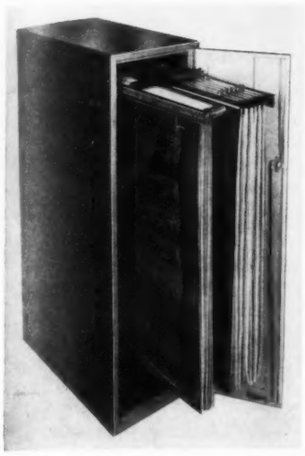


FLEXIBLE!
Diversified line
TAMPO'S *SHEEPSFOOT ROLLERS*

Greater production and easier pull. Tampo's independent drum oscillation and superior foot design gets more compacted yards per hour. There is a Tampo sheepsfoot roller model for every job and ground pressure. Write for latest bulletin and your dealer's name.

TAMPO MANUFACTURING COMPANY
DEPT. 5 • P. O. BOX 2340 • 1146 W. LAUREL ST.
SAN ANTONIO, TEXAS • PHONE: PE-3-9171

For more facts, use Request Card at page 18 and circle No. 303



the hanger. In this way 150 sheets of any length can be filed in only 12 linear inches.

For further information write to the Plan Hold Corp., Dept. C&E, 5204 Chakemco St., South Gate, Calif., or use the Request Card at page 18. Circle No. 145.

Easy-to-use kit tests for carbon monoxide

A carbon monoxide detector kit is offered by Oxy-Catalyst, Inc.

Called Oxy-Monoxo, the kit comes complete with aspirator pump and 24 detector tubes with rubber caps.

Included in the kit are easy-to-follow instructions on operating the carbon monoxide detector tubes in the exhausts of automotive engines using gasoline or LP gas, and on testing atmospheres of working areas.

For further information write to Oxy-Catalyst, Inc., Automotive Division, Dept. C&E, P. O. Box 151, Wayne, Pa., or use the Request Card at page 18. Circle No. 89.

New underlay electrode for tough hard-facings

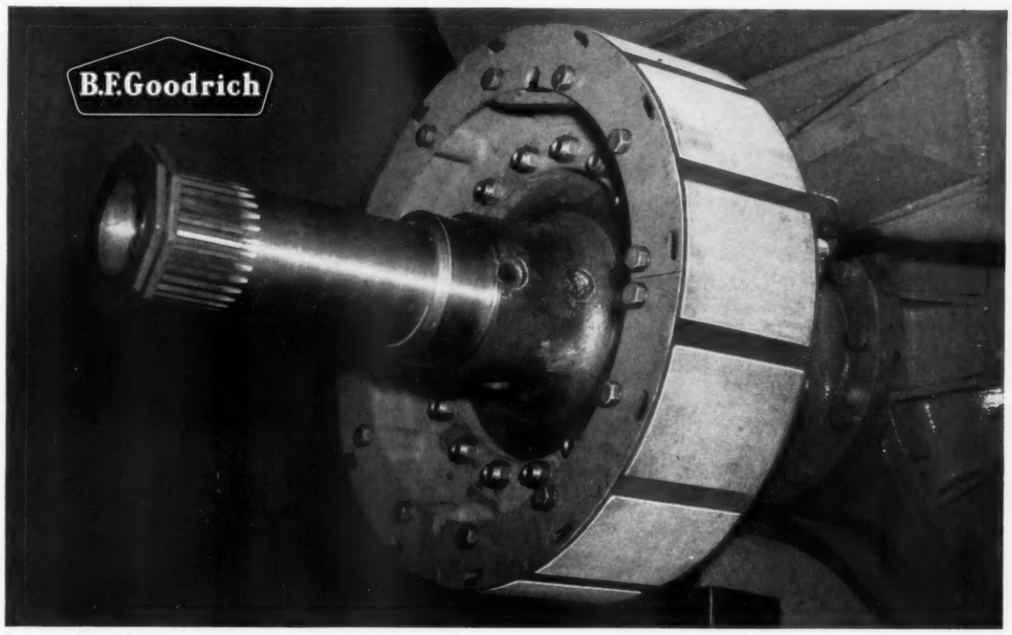
A high-speed welding electrode, said to be especially practical as a build-up deposit and/or underlay for specialized hard-facings, is offered by the Marquette Mfg. Co., Inc.

Designated No. 175 Bild-Up-Rod, the unit is a medium-carbon, low-alloy electrode with powdered metal coating, and is almost universally adaptable. According to the manufacturer, No. 175 work-hardens; used by itself it is tough and long wearing under moderate impact and abrasion, and stands up well against shock and rolling impact. As a base for hard deposits, it is recommended where heavy abrasion, compression, and impact are present—such as on heavy gears and tractor rollers.

This electrode is easy to use, and can be heat-treated, air-hardened, and forged. It is also capable of withstanding up to 375 amps at 32 volts for a ¼-inch rod, the company reports.

For further information write to the Marquette Mfg. Co., Inc., Dept. C&E, 307 E. Hennepin Ave., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 17.

Marquette's new high-speed welding electrode can be used as a build-up deposit and/or underlay for specialized hard-facings. As a base, it is useful where heavy abrasion, compression, and impact are present.



The *only* off-road brake with *full circle stopping power*

Tests prove the B.F.Goodrich Hi-Torque Brake can stop your heavy equipment faster, safer!

Tractor-Scraper Test

	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Stopping distance	41′ 9″	72′
Speed	14.83 mph	15.17 mph
Load	heaped	heaped

Two identical tractors and scrapers were used for this test. Unit fitted with B. F. Goodrich Brakes stopped almost twice as fast as unit using regular production brakes.

Off-Highway Truck Test

	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Deceleration rate	18 Ft/sec²	7 Ft/sec²
Speed	25 mph	25 mph
Gross vehicle weight	112,000 lbs.	112,000 lbs.
Wheel condition	sliding	rotating

Popular 24-ton capacity off-highway truck with original production brakes was run over test course. Immediately after fitting the same vehicle with B. F. Goodrich Brakes, the truck made the same run again, stopping almost *two and a half times* as fast.

For more information on how the B. F. Goodrich Hi-Torque Brake can help your equipment operate more safely, more dependably, write B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Troy, Ohio.

B.F.Goodrich Hi-Torque brakes

For more facts, use Request Card at page 18 and circle No. 305

GOT THIS?
(Predraining Problem)

GET THIS!
(Skilled Wellpoint Engineering)

From

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
West Palm Beach, Fla.

For more facts, circle No. 304

This Odell unit spreads aggregate or asphalt to a depth of 8 inches, a width of 10 feet. The spreader is easily carried on a truck tail gate without need for caissons or supporting wheels.

New tow-type spreader for aggregate, asphalt

A new and easier-to-use version of the Odell towed-type aggregate or asphalt spreader is announced by the Good Roads Machinery Corp.

A new floating strike-off bar is completely independent of the hopper, and reportedly controls spread depth from feather-edge to 8 inches. Spread width is adjustable from 1 to 10 feet. Adjustment of one bolt permits level spread, or up to 1½-inch crown or reverse crown. Constant spread-depth control is adjustable without tools, and the spreader can produce taper, according to the company.

A universal truck hitch, for practically any dump or semidump truck, is quickly attached and readily adjusts to different sizes and types without special attachments. The Odell spreader can be carried on a truck tail gate without need for caissons or supporting wheels.

For further information write to the Good Roads Machinery Corp., Dept. C&E, Minerva, Ohio, or use the card at page 18. Circle No. 22.

Scraper hauls 21-ton payloads at 31 mph

The Wooldridge Division of Continental Copper & Steel Industries, Inc., announces its new Continental-Wooldridge scraper Model CW 215.

With a struck capacity of 15 cubic yards, or 21 cubic yards heaped, the machine reportedly can haul 21-ton payloads at speeds in excess of 31 mph.

Powered by a 240-hp Cummins diesel engine, with a 10-speed forward and 2-speed reverse transmission, the CW 215 incorporates the company's Roto-gear positive steering.

According to the manufacturer, fast, easy loading in all types of materials is accomplished by boiling-bowl loading, an adjustable angle cutting edge, and long-profile bowl design. The air-operated power control unit is "live" at all times, providing the operator with instant power and immediate response while under way.

The CW 215 is interchangeable with the CWD 214, 25-ton rear-

The perfect mobile field kitchen . . . gleaming clean, lots of built-in features . . . designed for efficiency and economy.

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with SPARTAN industrial mobile units

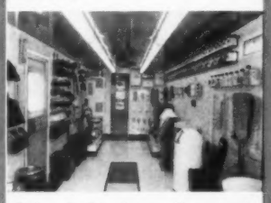
IN THE WORLD'S LARGEST MOBILE HOME FACTORY, Spartan mobile industrial units are built on our modern mass production assembly lines. You can usually select production line units to fit your company's needs from the wide selections of floor plans, interior arrangements and accommodations—or Spartan will design and build units to meet your most exacting requirements. For any kind of field housing, be sure to buy Spartan industrial mobile units—save on your initial investment—eliminate maintenance cost—and *mobilize* for economy by taking advantage of the famous Spartan rugged mobility. Spartan industrial units are designed especially for "business on the move."

SPARTAN AIRCRAFT COMPANY
1919 N. Sheridan Rd., Tulsa, Oklahoma

This Spartan industrial unit is equipped for . . . use as a classroom . . . sales meetings . . . product demonstrations . . . anywhere you want to take it.

Field men can direct company operations from this attractively furnished and fully equipped Spartan mobile office.

Rugged . . . lightweight . . . mobile . . . Spartan industrial units are used by many companies throughout the United States and in many foreign countries.



Here's a traveling salesroom, with a company's product line completely and neatly displayed. It can be moved easily and quickly.

This Spartan unit is equipped to serve as a parts storage room. Its mobility keeps vital repair parts close to field operations.

A field testing laboratory — rolls right along with the job itself . . . always ready for immediate use.

A fleet of Spartan industrial units enroute to a major oil company. Units are roving classrooms for filling station personnel training program.

For more facts, use Request Card at page 18 and circle No. 306

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For more facts, circle No. 307

A self-propelled and versatile scraper, the Model CW 215 has a 15-cubic-yard struck and 21-cubic-yard heaped capacity.

dumper, which permits use of the same tractor for either unit.

For further information write to Continental Copper & Steel Industries, Inc., Wooldridge Division, Dept. C&E, Sunnyvale, Calif., or use the Request Card at page 18. Circle No. 62.

Tractor-drive generators meet emergency demands

Two new series of emergency generators designed for tractor drive are announced by D. W. Onan & Sons, Inc.

The generators are available in three sizes: 4,000, 7,000, and 12,000 watts ac. According to the manufacturer, each will furnish the same 115/230-volt 60-cycle single-phase 3-wire current delivered by commercial high lines.

The units are offered in two different models. One features standard power-takeoff drive for use on any tractor; the other, a belt-driven unit.

For further information write to D. W. Onan & Sons, Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 50.

Powerful new vibrator needs only one operator

A new addition to the Wyco Junior vibrator line is announced by Wyzenbeek & Staff, Inc.

This new vibrator is equipped with a ¾-hp Universal 110-volt motor, and is used with vibrator heads of 1⅜ inches to 1⅝ inches in diameter, with either steel or rubber tips. Light enough to be handled by one man, it reportedly is powerful enough to be used with the lowest slump concrete.

For further information write to Wyzenbeek & Staff, Inc., Dept. C&E, 223 N. California Ave., Chicago 12, Ill., or use the Request Card at page 18. Circle No. 156.

Rubber conveyor belts made with cord plies

A new line of rubber conveyor belts, made with cord plies and designed for general construction use, is announced by the B. F. Goodrich Industrial Products Co.

Designated Nycord, the belts are said to be more flexible, and to have better troughing characteristics. The new construction increases edge protection, fastener holding ability, and impact resistance; it also provides extra protection against damaging effects of acid; moisture, and mildew. Each cord is completely insulated and imbedded in rubber.

For further information write to the B. F. Goodrich Industrial Products Co., Dept. C&E, 500 S. Main St., Akron, Ohio, or use the Request Card at page 18. Circle No. 57.

Lima Type 44-T Truck Crane setting concrete forms for overpass at Fort Washington Interchange of Pennsylvania Turnpike. Machine is owned and operated by F. A. Canuso & Sons, Philadelphia, Pa.

The LIMA Type 44-T... "a quality crane in every respect"

says F. A. Canuso & Sons, Inc.

"I've always had a high regard for Limas," says Julian Canuso of F. A. Canuso & Sons, Philadelphia contractors, "because of their fine design and rugged construction. We've had our Lima Type 44-T Truck Crane for 2 years now, and it has proved to be a quality crane in every respect. It's been kept busy during the past few months on this Turnpike job, mostly working on soft terrain, and we like the way it can get around and handle the heavy loads. Our experience with a real 'old-timer' will give you an idea why we think Limas have what it takes. About 5 years ago we bought a Lima Type 601 that had been working in the hard coal region for 10 years. To bring it up to date, we installed a new diesel engine, and we expect to get many more years of service from it. You just don't seem to be able to wear it out."

Mobile, rubber-mounted Limas are available on 6 x 4, 6 x 6, 8 x 4, and 8 x 6 carriers with capacities up to 70 tons; they will go anywhere a truck will go with speeds up to 25 mph. If mobility is not a factor in your operation, you can get crawler-mounted Limas that will handle loads up to 110 tons. And readily interchangeable front end attachments—shovel, dragline and pullshovel—give Limas the versatility you need for any of your heavy lifting and digging jobs.

Your nearby Lima distributor will be glad to give you the whole story on Lima quality. Get in touch with him today or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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LIMA Construction Equipment Division, Lima, Ohio

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For more facts, use Request Card at page 18 and circle No. 308

"BERG"
CONCRETE
SURFACERS

for: bridges, highways, airport runways, dams, culvert, floors, walls.

Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

CONCRETE SURFACING MACHINERY CO.
4665 Spring Grove Avenue **Cincinnati 32, Ohio**

For more facts, use Request Card at page 18 and circle No. 309

Product Parade

Perfection Steel's new frameless dump trailer is reported to allow an additional 4,000 pounds of legal payload.

Frameless dump trailer said to cut dead weight

The Perfection Steel Body Co. is offering a new frameless dump trailer said to add as much as 4,000 pounds legal payload potential to the tractor-trailer unit.

The conventional trailer frame has been eliminated in this unit, and specially designed body longitudinals serve as the trailer frame, as well as the solid foundation for the body construction. An increase in payload is further gained through the use of a weight-saving Perfection front-mounted telescopic hoist.

With the frameless features of the trailer, the body length can be economically increased, giving a greater spread between trailer and tractor axles and permitting increased legal payload without violation of state bridge laws.

The hoist with its individual base is mounted on the fifth wheel of the tractor. High-strength stabilizer arms tie the body directly to the hoist base, so that the body is supported and stabilized at three points. The trailer springs are immobilized as the body is dumped and the front trailer wheels are raised. The body then rests directly and solidly on the rear axle.

This frameless dump body is also available in all-welded aluminum.

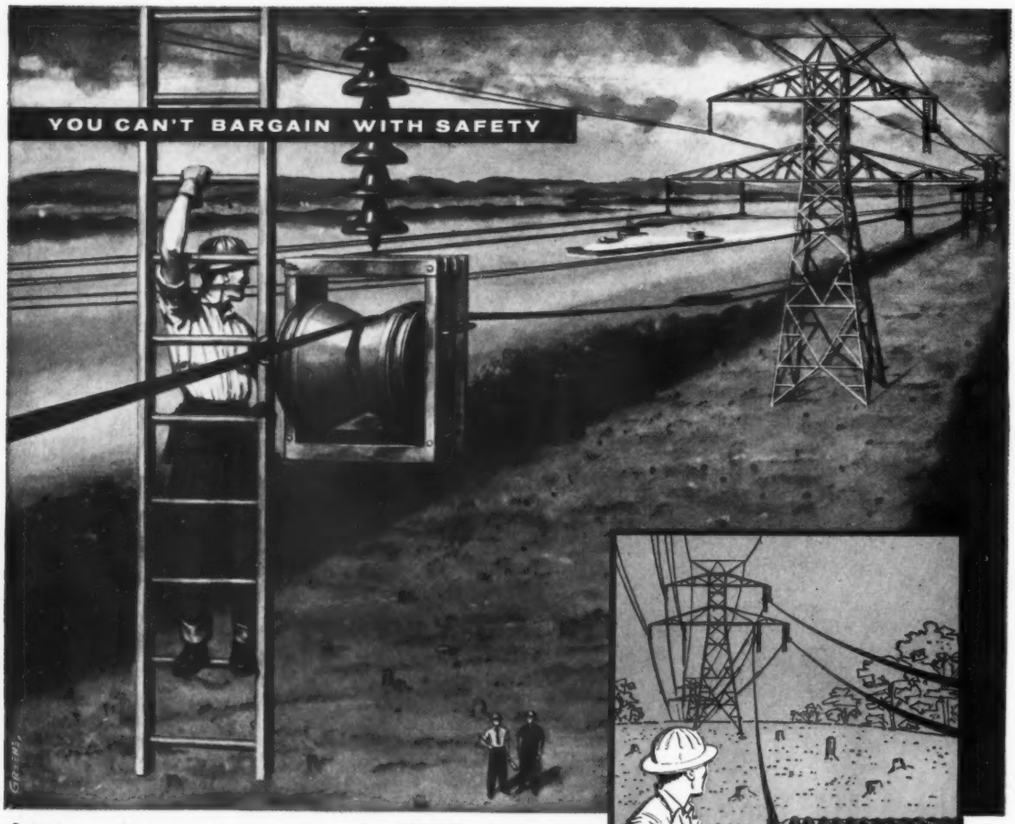
For further information write to the Perfection Steel Body Co., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 127.

Two loader-backhoe units available for tractors

Two new loader and backhoe combinations for its Models 335 and 445 industrial tractors are announced by the Minneapolis-Moline Co.

Called L-3 and L-4 Wheeloaders, the two new units are said to be quickly detachable and easy to operate for excavating, trenching, loading, and backfill work. The L-3 Wheeloader has 47 tractor brake horsepower, and the L-4 has 57.

Capacity of the loader bucket on the L-3 is ½ yard; on the L-4, ⅝ yard. On both models lifting capacity is 2,000 pounds; lift height is 10 feet 7 inches; dumping height is 8 feet; reach at 8-foot dump is 21 inches; and breakout force is 3,500 pounds.



Stringing conductors on towers carrying a live 330,000 volt circuit is a tough job. Hoosier Engineering Company of Columbus, Ohio, does it by threading conductors up to 1¾" through a tension machine and pulling them over sheaves on the tower arms with 9000 foot lengths of Wickwire Wire Rope. On jobs like this, where men's lives are at stake . . .

rope failure can be fatal

Whether you're stringing power lines, pulling drill pipe, or handling other hazardous hoisting jobs—don't bargain with safety. "Bargain" wire rope can cause more trouble and expense than you expect. Buy wire rope on the basis of *quality* . . . buy Wickwire Rope.

For extra strength—buy Wickwire's Double Gray IWRC extra improved plow steel wire rope

WICKWIRE ROPE — A CF&I PRODUCT

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THE COLORADO FUEL AND IRON CORPORATION

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5924

For more facts, use Request Card at page 18 and circle No. 310

The L-4 Wheeloader has both front-end ⅝-yard bucket and rear-mounted backhoe. Only one hydraulic control is required to operate the loader bucket.

A single hydraulic control operates this loader.

An important feature for an operator of the backhoe is that he faces his work throughout the 190-degree arc.

On both L-3 and L-4 backhoes, digging depth is 12 feet 6 inches. The reach is 19 feet 1 inch from the rear axle, and 15 feet 6 inches from the swing post axis. Dump height is 8 feet 6 inches, and transport height is 11 feet. Bucket widths range from 14 to 36 inches. The hydraulic outriggers are individually controlled.

For further information write to the Minneapolis-Moline Co., Dept. C&E, P. O. Box 1050, Minneapolis 40, Minn., or use the Request Card at page 18. Circle No. 84.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Self-propelled tamper is powerful, lightweight

The Model CM-15 tamper, said to eliminate the need for a 4 to 5-man air-tamp crew or 10-ton roller, is announced by Vibro-Plus, Inc.

Weighing only 242 pounds, it produces a 2,300-pound impact with 2,350 vibrations per minute, is self-propelled, and travels up to 55 fpm.

A special carburetor minimizes starting difficulties and assures continuous operation. The handle vibration of the CM-15 is reduced, as two sets of shock absorbers are used.

The CM-15 is said to be ideal for compacting all granular materials.

For further information write to Vibro-Plus Products, Inc., Dept. C&E, Stanhope, N. J., or use the Request Card at page 18. Circle No. 96.

DTA* *Concrete* DIAMOND CUTTING BLADES *Outperform* ALL OTHERS

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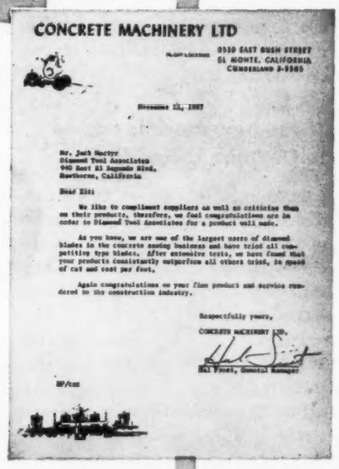
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Contractors throughout the United States are high in their praise of DTA'S* new, improved cutting blades. They report increased footage, faster cutting and lower labor costs. These blades have proved their worth under all working conditions and concrete mixtures. To find out how much you can reduce cutting costs... TEST CHECK a DTA* Concrete Diamond Cutting Blade now.

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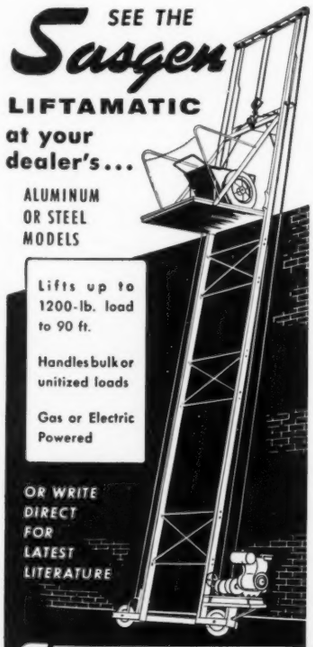

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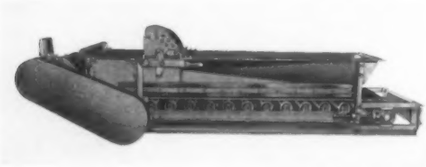


Barber-Greene's recently announced Model F-8 belt feeder offers a capacity of from 5 to 550 tons per hour.

Wide capacity range with new belt feeder

Offering a capacity range from 5 to 550 tons per hour, as well as other special engineering and design features, the new Model F-8 belt feeder announced by the Barber-Greene Co. is recommended for applications where a high degree of accuracy is necessary in feeding aggregates, etc.

A pre-engineered, packaged unit, the Model F-8 is shipped completely assembled and ready for immediate installation. Two drive arrangements are available.

Through the medium of a gear motor and a roller-chain drive, constant belt speed may be attained, with capacity controlled by a quadrant-type control gate equipped with a fine screw adjustment. As an optional, variable belt speed may be obtained through a variable speed reducer and roller-chain arrangement, working in conjunction with a quick-adjusting quadrant gate having control settings in 1-inch increments.

Manual controls may be mounted on the reducer, or remote controls may be installed at any point in a plant setup.

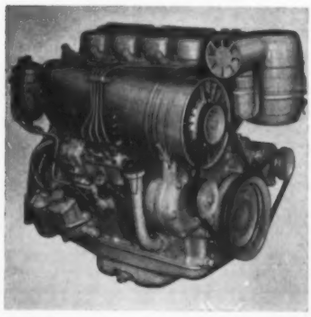
For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 124.

Three new models added to German diesel line

Three new models of Deutz air-cooled diesel engines have been added to the existing line, announces the Diesel Energy Corp., U. S. representative of Kloeckner-Humboldt-Deutz A.G.

The new engine models are the F3L 712, F4L 712, and F6L 712, representing 3, 4, and 6-cylinder vertical-in-line engines, with a bore and stroke of 3¾×4¾ inches.

For further information write to the Diesel Energy Corp., Dept. C&E, 82 Beaver St., New York, N. Y., or use the Request Card at page 18. Circle No. 16.



Offer four-frequency mobile radio unit

A four-frequency mobile radio-telephone unit that holds busy signals to a minimum is announced by the Radio Corporation of America. Designated Model CWR-U1V-A, the unit is primarily designed to permit the handling of a greater volume of on-the-road calls.

A multiple-frequency selector box, one of the unit's standard accessories, is mounted on the vehicle dashboard to enable the driver to switch to one of the three remaining channels when his regularly assigned frequency is busy. Another accessory, called the revert kit, automatically returns the unit to the assigned frequency when

KEEP OUR ROADS ON THE GO

American Bridge helps you build more road for the money!

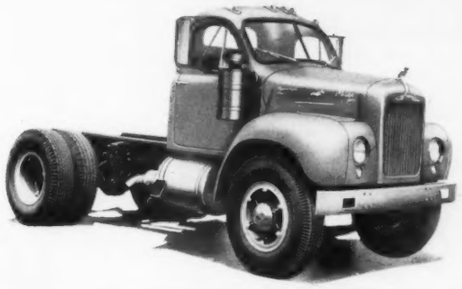
a call has been completed on the substitute channel.

The transmitter, receiver, and power supply are assembled in a compact drawer-type case.

Power is obtained from the vehicle battery by cable connection.

The RCA CWR-U1V-A can operate on any frequency in the 450–470 mc band.

For further information write to the Radio Corporation of America, Dept. C&E, Front and Cooper Sts., Camden 2, N. J., or use the Request Card at page 18. Circle No. 65.



This new Mack unit is said to be the shortest conventional tractor cab arrangement ever developed in America.

Shorter truck tractor permits greater payload

A heavy-duty truck tractor reported to be the shortest conventional tractor cab arrangement yet developed in this country has been announced by Mack Tracks, Inc. The unit measures only 89 inches from front of bumper to back of cab.

The shorter dimension permits the use of longer trailers with larger payload capacity without exceeding the over-all length limits prescribed for tractor-semitrailer combinations, according to the company.

The shorter length is available in two tractor models, the B-66 and the B-67, powered with Mack's Thermodyne gasoline and diesel engines, respectively.

The reduced length is the result of moving the Model B contour cab forward and allowing the engine to project slightly into the cab. A small reinforced Fiberglas cover is fitted over the portion of the engine protruding under the cowl. Removal of the Fiberglas cover and three small dash sections enables complete and easy access to the rear portion of the engine for repair or overhaul.

For further information write to Mack Trucks, Inc., Dept. C&E, P. O. Box 311, Somerville, N. J., or use the Request Card at page 18. Circle No. 126.

Wire rope combines Lang lay, regular lay

A new type of wire rope, said to combine the flexibility and abrasion resistance of Lang lay rope with the stability of regular lay rope under

severe operating conditions, is announced by the Wire Rope Division of John A. Roebling's Sons Corp.

Herringbone wire rope employs two pairs of Lang lay strands, and two strands of regular lay. It has relatively large outside wire construction to take the pressure and abrasion of contact with sheaves and drums, combined with smaller inside wire construction for maximum flexibility.

For further information write to John A. Roebling's Sons Corp., Wire Rope Division, Dept. C&E, 640 S. Broad St., Trenton 2, N. J., or use the card at page 18. Circle No. 40.

These Structures were furnished to Prince Georges County, Maryland—John H. Marburger, Jr., Administrator of Public Works—by Lane-Penncarva, Inc., Bealeton, Virginia.

Twin Beds for Winkledoodle

. . . or a quick, low-cost way to remove a roadblock

Winkledoodle is a quiet little creek which runs through a real estate development in the Maryland suburbs of Washington.

But sometimes even an innocent-looking stream like Winkledoodle becomes a headache when it blocks progress by dead-ending a street which ought not to be dead-ended. Solving such a problem is less difficult than you might think, as you can see from the experience of the Department of Public Works of Prince Georges County, Maryland.

Serving as giant twin-covered beds for Winkledoodle, long pipe-arch drainage structures shown here were made of USS AmBridge Sectional Plate. They each have a 12′6″ span, a 7′11″ rise, and are 112′ long. Each was erected in the bed of the temporarily diverted stream in just *five working days* by a five-man crew, plus crane.

Job Superintendent says: "They went together easier than any in my experience."

The dimensional accuracy of prefabricated USS AmBridge Sectional Plate Pipe, Pipe-Arches and Arches assures precision fit in the field. In fact, Arthur Richards, Bridge Superintendent, enthusiastically says that the Winkledoodle drainage structures went together easier than any in his experience. Mr. Richards particularly noted that all of the bolts fitted readily. He was also impressed with the uniform curvature of the interchangeable plates.

No forms needed . . . no breakage

USS AmBridge Sectional Plate Pipe, Pipe-Arches and Arches eliminate the need for forms. And, being made of steel, there is no breakage. They are permanent. And they can be extended whenever the road is widened. Fabricated to meet all federal and state specifications, they are available in a complete range of standard sizes to satisfy the design requirements for area of waterway openings.

For a free copy of our 28-page AmBridge Sectional Plate Catalog, write direct to our Pittsburgh Office. For information on smaller drainage structures made from USS Galvanized Corrugated Culvert Sheets, please send your inquiry to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

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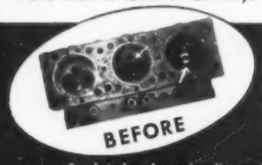
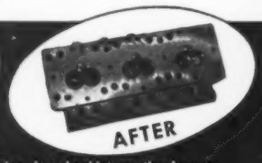
You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.





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"SPECIALISTS IN WELDING DIESEL CASTINGS"

For more facts, use Request Card at page 18 and circle No. 314

Product Parade

In addition to weighing less because of its frameless design, this Dorsey Model PDT-18 features a high-tensile steel body, and a heavy-duty hoist and suspension system.

Hydraulic dump trailer built as frameless unit

A frameless hydraulic dump trailer is offered by Dorsey Trailers, Inc.

The heavy-duty telescopic hoist is placed at the extreme front of the unit to utilize the tilt principle rather than lift, increasing the life of hoist and hydraulic system.

When dumping, two high-strength stabilizer arms reach out from the fifth wheel to a point midway of the trailer to assure stability. The front wheels of the tandem are raised from the ground during the last degrees of lift, putting the springs out of action and allowing the body to rest solidly on the rear axle.

The dump trailer is constructed of high-tensile steel, with aluminum optional. Standard lengths range from 18 to 28 feet.

For further information write to Dorsey Trailers, Inc., Dept. C&E, Elba, Ala., or use the Request Card at page 18. Circle No. 61.

New lightweight diesel rated 85 hp at 3,000 rpm

A lightweight high-speed diesel engine, rated at 85 horsepower at 3,000 rpm with fan and generator, is offered by Cerlist Diesel, Inc.

Designated Model 3, the unit has a net fan-to-flywheel weight of 605 pounds. The engine has no valves. Ports in the wet cylinder liner permit flow of incoming air from a roots-type blower. Exhaust ports handle the combustion waste gases.

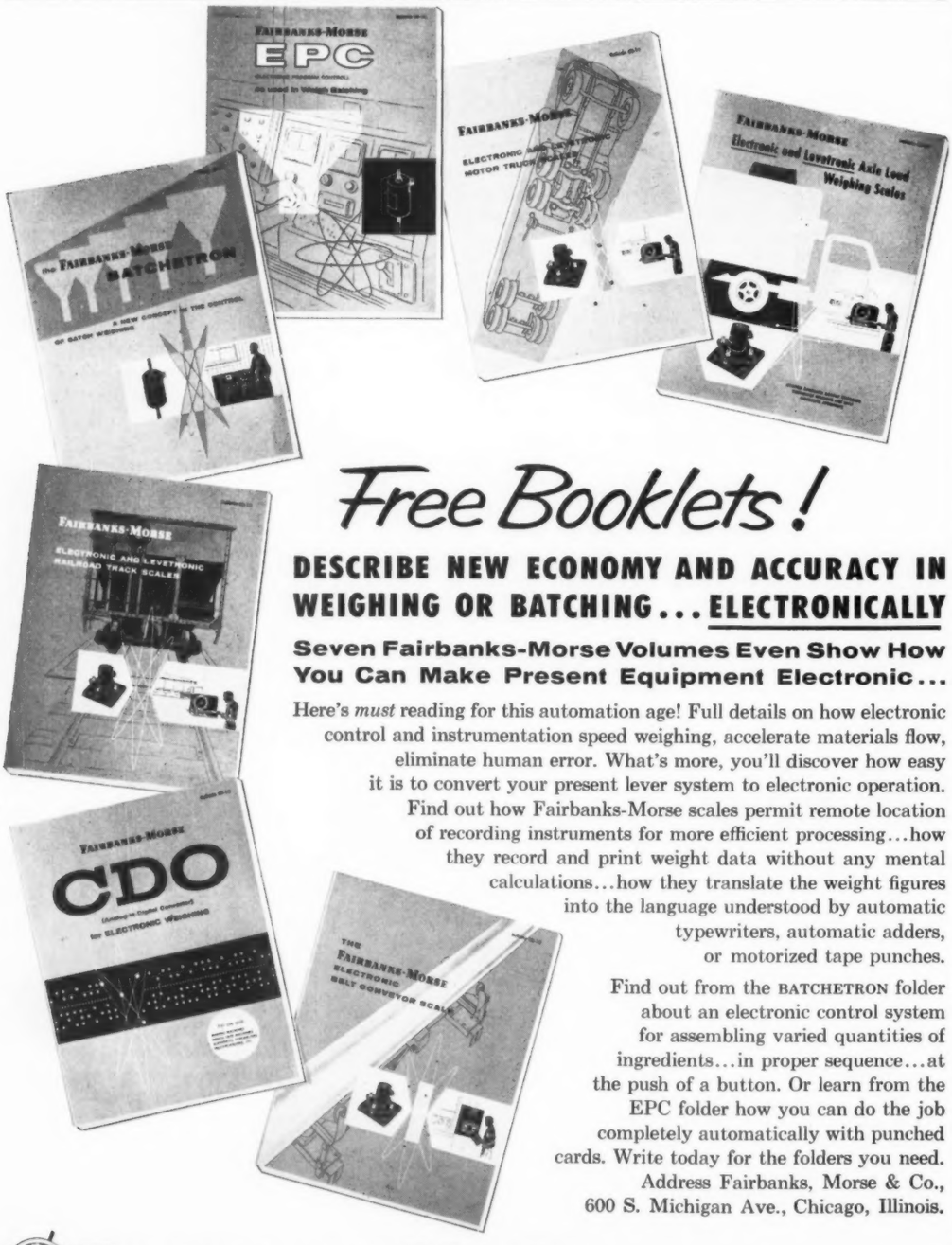
The Cerlist Model 3 is available as a fan-to-flywheel engine (Model 3A), open power unit (Model 3B), or covered power unit (Model 3C).

For further information write to Cerlist Diesel, Inc., Dept. C&E, P. O. Box 1247, Burlington, N. C., or use the card at page 18. Circle No. 93.

Crawler tractor features many new improvements

A number of major improvements in the Model TC-12 crawler tractor are announced by the Euclid Division of General Motors.

This twin crawler features 402 net



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Here's *must* reading for this automation age! Full details on how electronic control and instrumentation speed weighing, accelerate materials flow, eliminate human error. What's more, you'll discover how easy it is to convert your present lever system to electronic operation. Find out how Fairbanks-Morse scales permit remote location of recording instruments for more efficient processing...how they record and print weight data without any mental calculations...how they translate the weight figures into the language understood by automatic typewriters, automatic adders, or motorized tape punches.

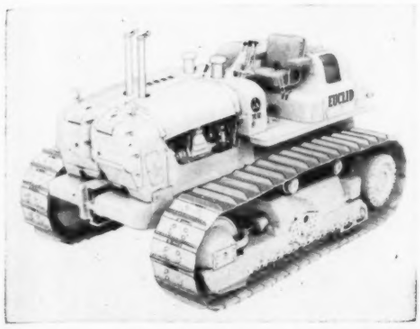
Find out from the BATCHETRON folder about an electronic control system for assembling varied quantities of ingredients...in proper sequence...at the push of a button. Or learn from the EPC folder how you can do the job completely automatically with punched cards. Write today for the folders you need. Address Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS

For more facts, use Request Card at page 18 and circle No. 315



The new improved Euclid TC-12 crawler tractor features 402 net hp delivered to the power train.

horsepower delivered to the power train, two Torqmatic Drives with independent planetary track drives, no steering clutches, eight roller track frames, a rear-mounted cooling system, in-seat starting, fully automatic hydraulic track recoil adjustment, and unitized assemblies.

As a result of heavier construction and more rugged components throughout, the bare weight of the tractor has been increased from 64,000 to 67,000 pounds plus. Design improvements have also resulted in longer-wearing components, in greater accessibility of many components for faster, easier servicing, and in better over-all operation, according to the manufacturer.

For further information write to the Euclid Division, General Motors Corp., Dept. C&E, 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 87.

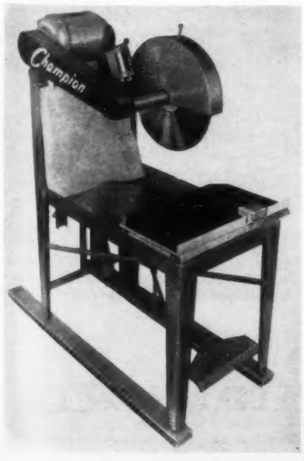
Masonry saw cuts 8-inch blocks in single cut

The Champion Mfg. Co. announces its Model 20 Blok-Saw, a 20-inch-diameter unit specifically designed for block cutting.

According to the manufacturer, the new saw's primary benefit is that it enables the operator to saw an 8-inch block in one cut.

The Model 20 is powered by a choice of 1½, 2, or 3-hp fan-cooled motors.

For further information write to the Champion Mfg. Co., Dept. C&E, 2028 Washington Ave., St. Louis 3, Mo., or use the Request Card at page 18. Circle No. 176.



For more facts, circle No. 316→

Gravel for this roof is being supplied with a Reimann & Georger 400-pound-capacity hoist and bucket. The hoist has a trolley track that permits the load to be moved back from the roof edge for safe unloading. The bucket is emptied directly into a wheelbarrow, then moved out over the roof edge and lowered to the truck. While it is being refilled, the man on the roof delivers the wheelbarrow load and returns to operate the hoist. The bucket's toggle lock bottom is released by handles on the sides. For further information write to **Reimann & Georger, Inc.**, Dept. C&E, 1818 Harlem Road, Buffalo 25, N. Y., or use the Request Card at page 18. Circle No. 163.

Largest Crane on Rubber Tires works on "Richest Hill in the World"

A 75-ton Lorain Moto-Crane is erecting 2048 tons of steel at Anaconda Copper's Berkley Pit Project near Butte, Montana, where three conveyers, totaling 2000 feet long, are being built to transfer ore from the open pit to loading bins.

It is on big jobs like this that the Lorain MC-875, the biggest rubber-tire crane, proves its worth. The massive Lorain-designed-and-built carrier has a frame of a single-piece, box-section, alloy steel casting designed to defy the deflections and torsional stresses of heavy-duty crane service.

Job-proven "Shear-Ball" turntable mounting distributes loads over more than 70 hardened steel balls — eliminates maintenance, adjustment, lubrication problems of older style roller designs.

2-Lever, "Joy-Stick" air power controls are simpler, easier, faster — fewer motions, less operator fatigue.

The Square-Tubular-Chord Boom is stronger and lighter; it permits greater capacities, wider ranges, greater lengths.

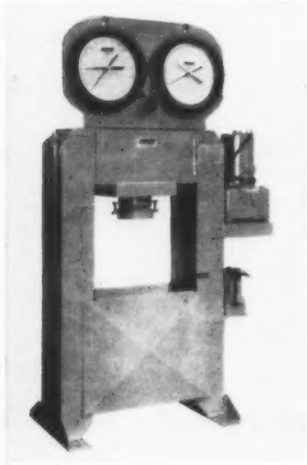
Not every contractor can use a rubber-tire crane of this size, but where the demands are greatest, this is the crane for the job. Comparable outstanding performance and design advantages also are available in other Lorain sizes starting at 7 tons — on rubber tires or crawlers. See your Thew-Lorain Distributor for details.

This 75-ton Lorain Moto-Crane, model MC-875, has been on the job daily since June, 1957. Here are some of the jobs it has performed:

1. Unloaded 49-ton crusher jaws.
2. Erected 18-ton conveyor gallery spans, 106 ft. long.
3. In this picture, it's using a 120-ft. boom, plus a 30-ft. tip extension, to erect the 90-ft. high machine house. (This long-range D-3 boom is extensible to 200 ft., plus a 40-ft. tip extension.)
4. Has walked all over the job with a 120-ft. boom, including travel under telephone wires only 20 ft. high.

THE THEW SHOVEL CO.
Lorain, Ohio, U.S.A.

RELIABILITY IN ACTION / THEW LORAIN



New compression, flexure tester for job-site use

Forney's Inc. announces its new Model QC-100-SLD compression and flexure tester designed especially for plant and job-site use.

Equipped with 12-inch-diameter, spring-mounted, high and low-pressure gages, a 2-stage manual pump, and a constant-flow non-pulsating electric pump, the unit has a range of 0 to 30,000 pounds low pressure, and 0 to 250,000 pounds high pressure.

The standard model is equipped for testing 6×12-inch cylinders in compression, and 6×6×40-inch beams in flexure. Optional extra equipment is available for testing 2×2, 4×4, 6×6-inch cubes, and 8×8×16-inch blocks. Capacity can be increased to 400,000 pounds, if desired.

For further information write to Forney's, Inc., Tester Division, Dept. C&E, P. O. Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 159.

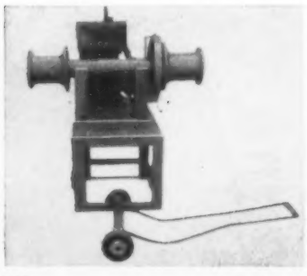
Double-headed capstan speeds scaffold handling

A capstan designed to speed raising and lowering of scaffolding or staging on the sides of buildings is announced by the King Mfg. Corp.

Designated Model 23-D, the new capstan has two spools or heads so that both ends of the staging can be hoisted simultaneously, thus keeping it level during the ascent.

Spools are driven by means of a roller chain-and-sprocket drive. Power is supplied by an air-cooled gasoline engine.

For further information write to the King Mfg. Corp., Dept. C&E, 3138 W. Chicago Ave., Chicago 22, Ill., or use the Request Card at page 18. Circle No. 75.



Only three man-hours are needed to put up an all-metal Fulfab 10×20-foot job-site shanty. All sections are sized to be carried on the trucks that most contractors own. The building is said to be fireproof, pilferproof, and extremely adaptable. For further information write to **Fulfab, Inc.**, Dept. C&E, 1525 Whipple Road S. W., Canton, Ohio, or use the Request Card at page 18. Circle No. 179.

Now... 21 yd. struck capacity in

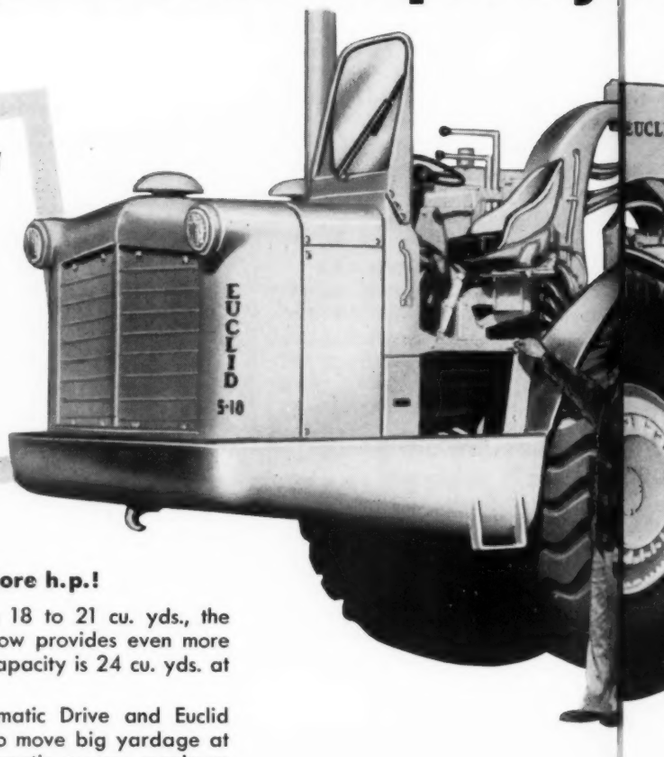
STILL MORE PRODUCTIVE CAPACITY WITH THE NEW S-18

Up to 30 yds. heaped

325 h.p.

Torqmatic Drive with lock-up

Filtered hydraulic system



3 more yards . . . 25 more h.p.!

With struck capacity increased from 18 to 21 cu. yds., the improved Model S-18 Euclid Scraper now provides even more low-cost earthmoving ability. Payload capacity is 24 cu. yds. at 3:1 slope and 30 yds. at 1:1.

The 325 h.p. diesel, 4-speed Torqmatic Drive and Euclid planetary drive axle enable the S-18 to move big yardage at low cost. Converter lock-up in the Torqmatic assures maximum efficiency on grades and long, high speed hauls.

Quickly responsive, full hydraulic steering and the large rolling radius of 27.00 x 33 tires help make the S-18 a highly maneuverable machine, despite its big capacity. Non-stop 180° turns are made in 36 ft. 4 in.

Hydraulic lever action, with only one short cable for the apron lift, provides fast, easy control of all scraper actions and eliminates downtime and expense from cable breakage. Model S-18 incorporates Euclid's original low bowl design with the structural strength needed for working with the biggest pusher tractors. The 4-section cutting blade is adjustable and reversible for efficient loading in any scraper material and longer blade life.

See your Euclid dealer for facts and figures on the improved S-18 with 21 yd. struck capacity . . . he'll be glad to explain the many new production advantages and show you why *Euclids are your best investment.*

EUCLID Division of General Motors, Cleveland 17, Ohio

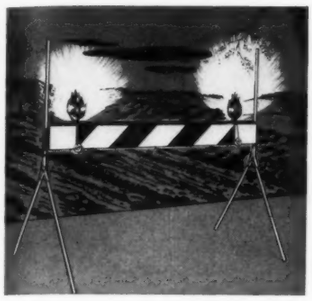
Hydraulic lever action provides fast, independent control of all scraper operations . . . eliminates downtime and expense due to cable breakage. High apron lift and roll-out ejector shed the load fast and clean. Independent control of bowl, apron and ejector permits controlled spreading of the load.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Announce new barricade with twin flare burners



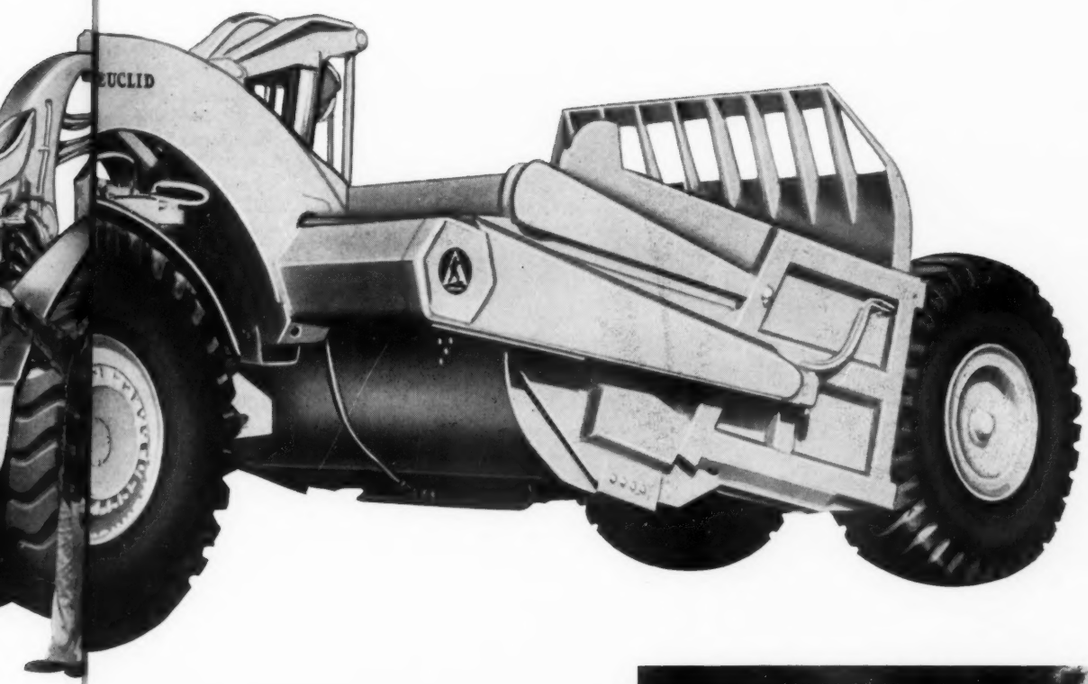
The Anthes Co. announces its new twin-flare barricade.

This barricade is 5 feet wide. The cross beam provides a steel tank of 5-gallon capacity for fuel, enough to keep the burners lit for 7 days. The unit is said to be simple to erect and service, and easy to store.

For further information write to the Anthes Co., Dept. C&E, Fort Madison, Iowa, or use the Request Card at page 18. Circle No. 71.

This four-axle 8×4 carrier with driving rear tandem is one of the new FWD double-tandem crane carriers.

ity in "EUC" S-18 Scraper



Four identical and reversible blade sections assure long blade life in any material. Sections can be adjusted to provide the most efficient drop-center arrangement for loading a variety of materials from loose sand to heavy clay, shale and ripped rock.

Torqmatic Drive pays off in faster cycle time and more production. There's no clutching or loss of momentum when changing to any of the 4 forward speeds. Converter lock-up makes efficient use of engine power on grades and long hauls by providing direct drive.

Low, wide bowl—a feature of Euclid scrapers for years—enables the S-18 to carry more pounds of payload. It has the structural strength needed for push loading by the largest, most powerful tractors such as the Euclid TC-12 Twin Crawler.

New crane carrier series feature double tandems

Two new series of double-tandem 8×4 and 8×6 rubber-tire crane carriers have been introduced by the Four Wheel Drive Auto Co.

Designed for the heavy-duty operations of 25 to 45-ton cranes, these carriers are said to provide easy handling of greater load capacity by distributing the extra weight over two axles in front and two in the rear. The 8×4 models are equipped with driving power to both axles of the rear tandem. The 8×6 models are designed with a driving rear tandem plus a driving front axle on the front tandem, providing six-wheel-drive.

New, roomy cabs with forward-slanting windshields are featured. Gasoline and diesel engines in a wide range of horsepower ratings are optional. The new series have reinforced high-tensile steel frames which give high torsional strength with minimum weight.

Constant drive power to the two rear axles of FWD 8×4 carriers, and to one front and two rear axles of the 8×6's, is designed to convert all weight and power to usable tractive force under rugged work conditions, according to the manufacturer.

For further information write to the Four Wheel Drive Auto Co., Dept. C&E, Clintonville, Wis., or use the Request Card at page 18. Circle No. 125.

Vitaminized salt tablets help reduce heat fatigue

The United States Safety Service Co.'s Pep-Up impregnated salt tablets are now available with vitamins B1, B2, and C added.

The new salt tablet is an addition to the firm's Pep-Up regular impregnated and enteric coated tablets. The tablets with vitamins added are available in a 500 or 1,000-size plastic throw-away dispenser.

For further information write to the United States Safety Service Co., Dept. C&E, 1535 Walnut St., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 51.

For more facts on these products, circle the indicated number on the Request Card at page 18.

←For more facts, circle No. 317

No-shift, instant reversing makes the Work Bull Model 1001 tractor-loader a handy unit for stock pile work. The multi-purpose, ⅞-cubic-yard-capacity machine has a low pivot point for direct line thrust, but has telescoping arms for extra-long reach. A special load-shock absorber cushions the load on rough terrain and helps keep buckets heaped. For further information write to the **Massey-Ferguson Industrial Division,** Dept. C&E, 1009 S. West St., Wichita, Kans., or use the Request Card at page 18. Circle No. 113.

New engine hour meter offers greater accuracy

The Engler Instrument Co. announces a new-size dc engine hour meter to fit existing panel mounting holes. It measures 2 7/64 inches in diameter and 2⅜ inches in depth.

This instrument offers greater accuracy in that the unwind time is now under one minute, a feature that practically eliminates the need for the electric brake, the company points out.

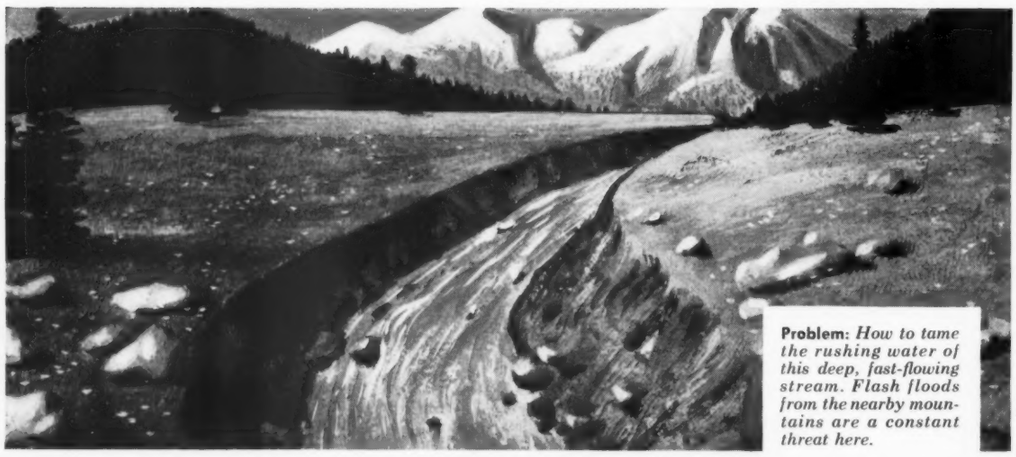
The new Engler hour meter is reported to have a longer life expectancy because of its low power consumption.

For further information write to the Engler Instrument Co., Dept. C&E, 250 Culver Ave., Jersey City 5, N. J., or use the Request Card at page 18. Circle No. 33.

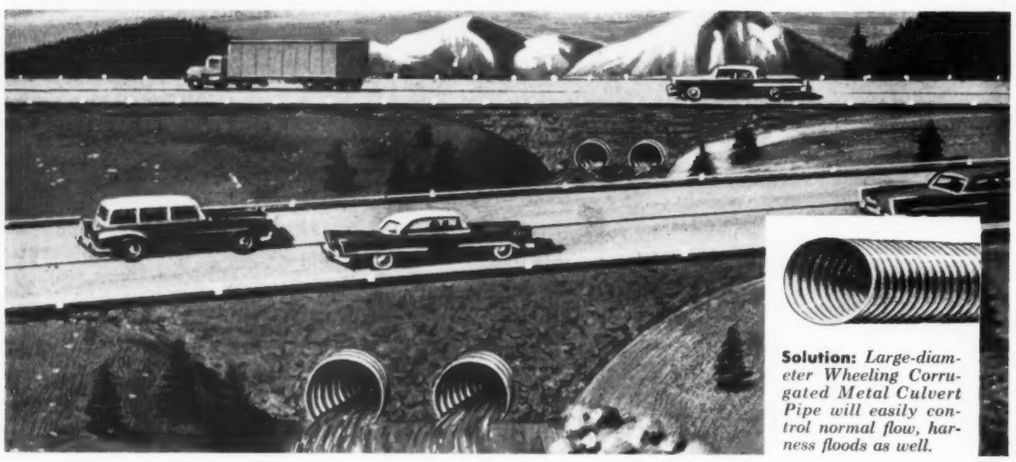
Portable generator set develops 35,000 watts

A portable lightweight generator set developing 35,000 watts is announced by the Engine-Material Handling Division of the Allis-Chalmers Mfg. Co.

Designated Model G-226, the set is powered by the Allis-Chalmers Power-Crater engine. The unit is complete as a package, with all controls and ac-



Problem: *How to tame the rushing water of this deep, fast-flowing stream. Flash floods from the nearby mountains are a constant threat here.*



Solution: *Large-diameter Wheeling Corrugated Metal Culvert Pipe will easily control normal flow, harness floods as well.*

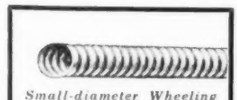
How you can solve stubborn drainage problems — with Wheeling Metal Culvert Pipe

When road-builders come up against drainage problems like these, versatile Wheeling Culvert Pipe comes up with more solutions — at lower cost — than any other type of drainage pipe.

That's because Wheeling Metal Pipe combines flexibility under heavy traffic loads with durability over years of rugged service. It combines easy installation (unskilled labor and light field equipment can handle most jobs) with economical transportation (the long sections of pipe are nestable, won't crack or spall).

In short, when the problem is drainage, the solution is Wheeling Metal Culvert Pipe.

Wheeling Metal Culvert Pipe or Pipe Arch, in Copper-bearing Steel or Copper-bearing Pure Iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters. Contact your nearest Wheeling warehouse, culvert plant or sales office. Wheeling Corrugating Company, Wheeling, W. Va.



Small-diameter Wheeling Metal Pipe is ideal for farm and home drainage requirements.

Wheeling Pipe Arch—a wider type of metal pipe with comparatively flat bottom—is used where headroom is limited.

WHEELING CORRUGATING COMPANY - IT'S WHEELING STEEL

WHEELING WAREHOUSES, SALES OFFICES OR CULVERT PLANTS ARE IN: ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DES MOINES DETROIT HOUSTON KANSAS CITY LOUISVILLE MADISON MARTINS FERRY MINNEAPOLIS NEW ORLEANS NEW YORK PEORIA PHILADELPHIA RICHMOND ST. LOUIS.

For more facts, use Request Card at page 18 and circle No. 318

INCREASE PROFITS with
ECONOMY STEEL FORMS

Save time, money, materials when placing concrete for:

- Culverts, Bridges and Box Tunnels
- Prestressed Beams, etc.
- Tanks—Circular and Rectangular
- Building Walls Foundations

FORMS FOR RENTAL OR PURCHASE

Economy Forms Corporation E
Box 128, H. P. Station
Des Moines, Iowa

Please send catalog and address of nearest sales office (there are 21 coast-to-coast).

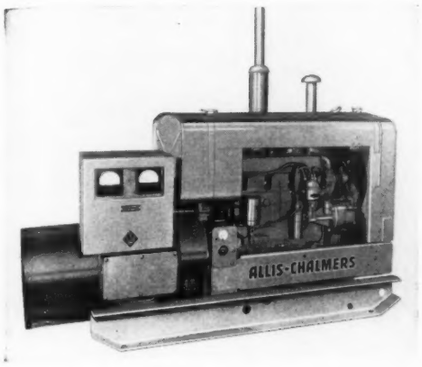
Name_____

Firm name_____

Street address_____

City_____ State_____

For more facts, use coupon or circle No. 319



cessories needed for immediate use. Because it is completely weatherized, it can be used either outdoors or indoors. The switchboard and instrument panel are protected against weather, dirt, and tampering by a completely enclosed cabinet with a glass door that can be locked.

The G-226 has an over-all length of 68 inches, is 26 inches wide and 37 inches high. It can be operated either by gas or gasoline.

For further information write to the Allis-Chalmers Mfg. Co., Engine-Material Handling Division, Dept. C&E, Milwaukee, Wis., or use the Request Card that is bound in at page 18. Circle No. 108.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

Slope-checking device improved in sensitivity

A new improved slope-checking instrument for mounting on graders and other machines and vehicles is announced by The Slope Meter Co.

Designated Slope Meter No. 2, the unit features an indicator that automatically shows the exact grade or slope on which a machine is working. By watching this instrument, the operator is able to construct and check variable slopes while the machine is in motion. The machine's accuracy is said to be sufficient to eliminate hand-checking altogether.

The new device—bent on a flatter arc and entailing only 16 degrees—reportedly is more sensitive than its predecessor model, and is especially suitable for fine crown work on highways.

The Slope Meter No. 2 has been tested successfully on pavers, and withstands constant heat and vibration, according to the manufacturer.

For further information write to The Slope Meter Co., Dept. C&E, Box 268-C, Excelsior, Minn., or use the Request Card at page 18. Circle No. 111.

Truck tire is offered for excavating, quarry work

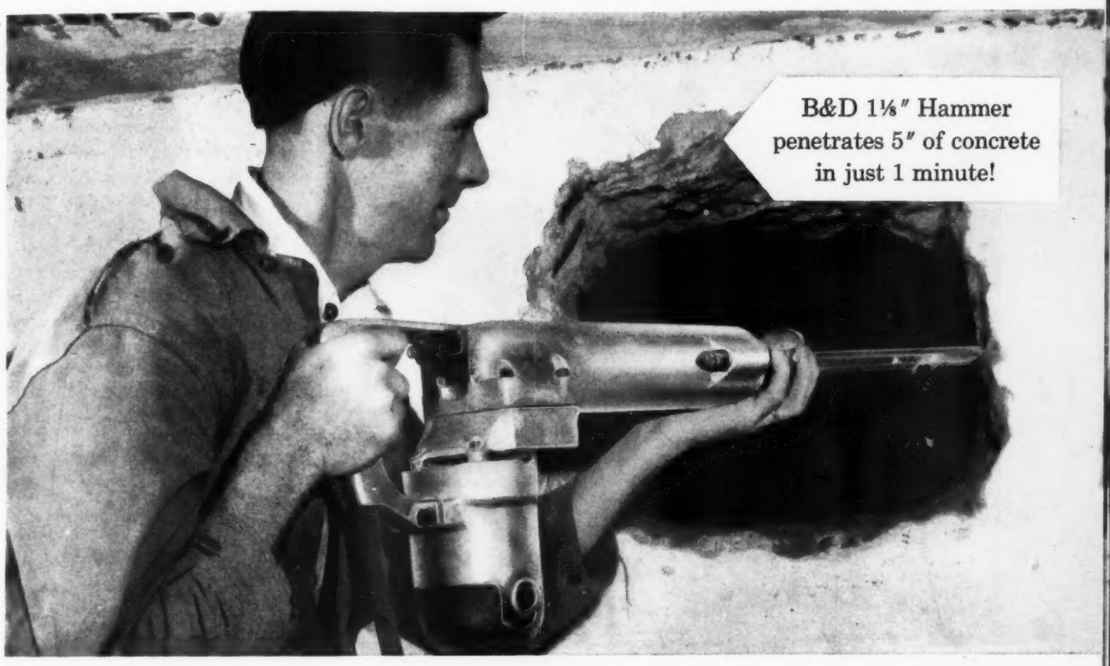
A truck tire especially designed for rock excavating and quarry work is offered by The Goodyear Tire & Rubber Co.

Designated Hard Rock Lug Xtra Tred, the tire is made with 3-T nylon cord, and reportedly contains as much as 30 per cent more rubber, by weight, in the tread.

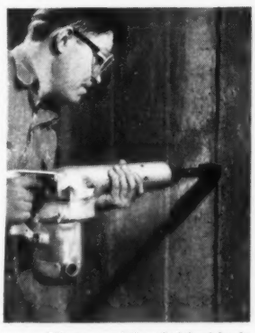
Wide lugs and thick shoulders tapered down the side of the tire give powerful pull, grab, and traction, according to the manufacturer.

The tire is available in sizes ranging from 14.00×24 to 18.00×33, tube-type, and from 14.00×25 to 18.00×25, tubeless.

For further information write to The Goodyear Tire & Rubber Co., Dept. C&E, 1144 E. Market, Akron, Ohio, or use the Request Card at page 18. Circle No. 48.



11 times as much material removed 13 times faster than by hand!



Give your job a finished look with a Black & Decker Bushing Tool.

For the finest, and fastest work always specify genuine Black & Decker forged hammer tools.

Trenches for conduit are a cinch with a Black & Decker Cold Chisel.

Look for Swifty Service at one of B&D's 48 Factory Service Branches. There's one near you.

B&D 1⅛" Hammer drastically cuts cut-through time—labor costs!

Add a Black & Decker 1⅛" Hammer to your tool kit and watch how quickly it opens up your profit margin! It punches through concrete walls in minutes—opens the way for pipe and duct in a fraction of the time it takes by hand.

Plugs into any convenient outlet—the Black & Decker Electric Hammer takes on chipping, gouging, digging, caulking, pointing, and many other jobs! Mail coupon today for a free demonstration on your job-site! If additional information is desired just check the box.

Leading Distributors Everywhere Sell

Look Under "TOOLS-ELECTRIC" in Yellow Pages

Black & Decker®

Quality Electric Tools—Power-built to set the pace

MAIL TODAY FOR FREE DEMONSTRATION

THE BLACK & DECKER MFG. CO., Dept. 1307, Towson 4, Md.
(In Canada: Brockville, Ontario.)

☐ Please arrange a demonstration of your 1⅛" Hammer.
☐ Please send me additional information on tools checked.

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

☐ Portable Grinders ☐ Drills ☐ Shears ☐ Jig Saws

For more facts, use coupon or circle No. 320→

For more data on any item, circle indicated number on card at page 18.

IT's NEW --- The Campbell Sliding Cab

for the models HU, HH, and HO

"Payloaders"!!!

This sturdy, modern design offers features long desired by "PAYLOADER" operators, among them—Sliding top, ball bearing mounted on steel channel—Rubber seals to insure weather tightness—Permanently mounted access ladder —Rear view mirror—Tinted safety glass windshield and skylight.

Investigate this completely new design in "Payloader" Cabs by calling your "Payloader" distributor, or contact

CAMPBELL DETACHABLE CAB CO.
WAUCONDA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 321

CLEVELAND 80W

Does all three jobs better—with only one operator

Lays pipe • 30,000 foot-pound capacity—power boom, up and down • 4 line speeds • long reach, 21 feet • sets hydrants, valves • unloads, strings • pulls street crossings • handles headache ball.

Backfills fast—from either side of trench • 20 passes per minute • 4½ foot scraper board • backfills clean • stays off completed work • works safer, parallels work • fits all job conditions.

Tamps as it fills • meets rigid density specifications • tamps from the bottom up • parallels work, no straddling • tamps wider, tamps safer • breaks concrete • reduces haul-out • saves clean-up.

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere

For more facts, use Request Card at page 18 and circle No. 322

Working on a concrete-coated steel water-pipeline near Midland, Texas, this CRC ditch padding machine is used to supply the 12 inches of fine dirt required to pad the line, which runs through caliche-type soil.

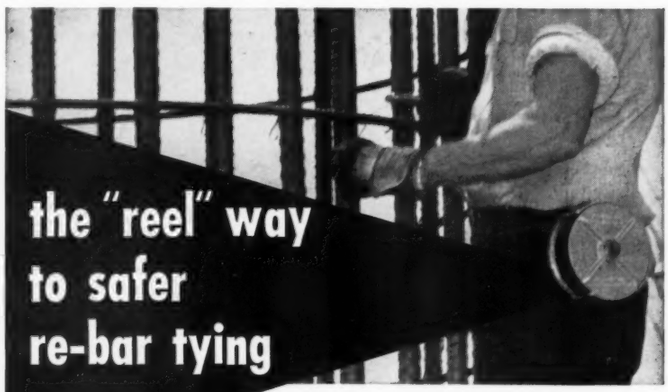
Ditch padding machine attaches to dragline

A new improved ditch padding machine, adaptable to any standard ¾-cubic-yard dragline, is offered by Crutcher-Rolfs-Cummings, Inc.

The machine consists of an endless steel wire grid, 6 feet wide, rotating on a shaker track system which loosens dirt from rocks in the spoil. A backfill bucket drags the spoil onto the grid, which is suspended across the ditch by the dragline boom. Fine dirt is shaken through the grid and onto the pipe, while all rocks larger than the grid openings are conveyed across to the working side of the ditch. Even damp earth is sifted through the grid by the shaker system, the manufacturer reports.

The dragline operator controls and operates the machine from his cab chair.

For further information write to Crutcher-Rolfs-Cummings, Inc., Dept. C&E, P. O. Box 2073, Houston, Texas, or use the Request Card at page 18. Circle No. 105.



Once your workers have used CF&I Cal-Tie Wire in the handy belt-borne dispenser they are "sold" on its safety and convenience. For it eliminates the dangers associated with carrying clumsy shoulder coils.

Work in close quarters is made easier, for there is no cumbersome coil to catch on protruding objects—no loose wire ends to cause costly eye and face injuries—no kinky, half-used or discarded coils to trip workers.

On your next project try Cal-Tie Wire in the new CF&I handy reel dispenser. Learn how safe, efficient and economical it is to use. Cal-Tie Wire Coils weigh approximately four pounds and are available in 14- through 20-gage wire. For full details contact the nearest sales office listed below.

CF&I CAL-TIE® WIRE
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Neb.) • Los Angeles • Oakland Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro Seattle • Spokane • Wichita • WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo Chicago • Detroit • New Orleans • New York • Philadelphia • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg 5688

For more facts, use Request Card at page 18 and circle No. 323

(Continued from Col. 1)

The Model 995 GM Lugmatic diesel, heaviest tractor in the new Oliver line, handles a 1½-yard payload with the new No. 998 front-end loader.

New wheel tractor line ranges to 90 horsepower

A complete new line of industrial wheel tractors has been announced by The Oliver Corp. The new units range from the Model 550, available with either gas or diesel engine, to the 995 GM Lugmatic diesel with automatic torque converter, heaviest and most powerful wheel tractor ever produced by Oliver.

All but the two largest models are available with a choice of gasoline or diesel power.

The new tractors mount a wide range of equipment, and are reported to incorporate the most advanced features. The 550, a 35-hp model, has completely independent power take-off, built-in automatic hydraulic system, double-disk brakes, and rubber torsion spring seat. Power steering is optional. The 770 and 880 both have added power in the popular 50 and 60-hp classes, the 880 having been rated at 64 horsepower. Reverse-O-Torc transmission, which enables the operator to reverse the tractor at the touch of a lever, is optional on both models.

For further information write to The Oliver Corp., Dept. C&E, 400 W. Madison St., Chicago 6, Ill., or use the Request Card at page 18. Circle No. 118.

Self-propelled chassis for choice of drills

The addition of the TDL Trac-Drill to its line of self-propelled drill chassis is announced by the Joy Mfg. Co. Designed to carry any one of five Joy Silver Streak drifter drills, the TDL

permits the selection of a drifter for drilling almost any size and depth blast hole up to 3½ inches in diameter and to 40 feet deep.

The new rig also permits the selection of a drill and chassis combination to match the available air supply. The chassis, without feed, feed motor, and drill, weighs 2,900 pounds and is available with feeds for 8 or 10-foot steel changes.

Tramming power is provided by two Joy Pistonair motors which will move the unit at a rate of 89 fpm on level ground, and 63 fpm on a 36 per cent grade. The air-motor drive is direct-connected to a specially hardened drive sprocket which eliminates the need for any intermediate drive chain.

The "U" bar support for drill feed and drill is quickly raised and lowered by a hand-powered, air-driven hydraulic lift, and permits the drilling of toe-holes or horizontal holes as high as 72 inches from ground level.

For further information write to the Joy Mfg. Co., Dept. C&E, 333 Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card that is bound in at page 18 of this issue. Circle No. 123.

For more facts, circle No. 324→

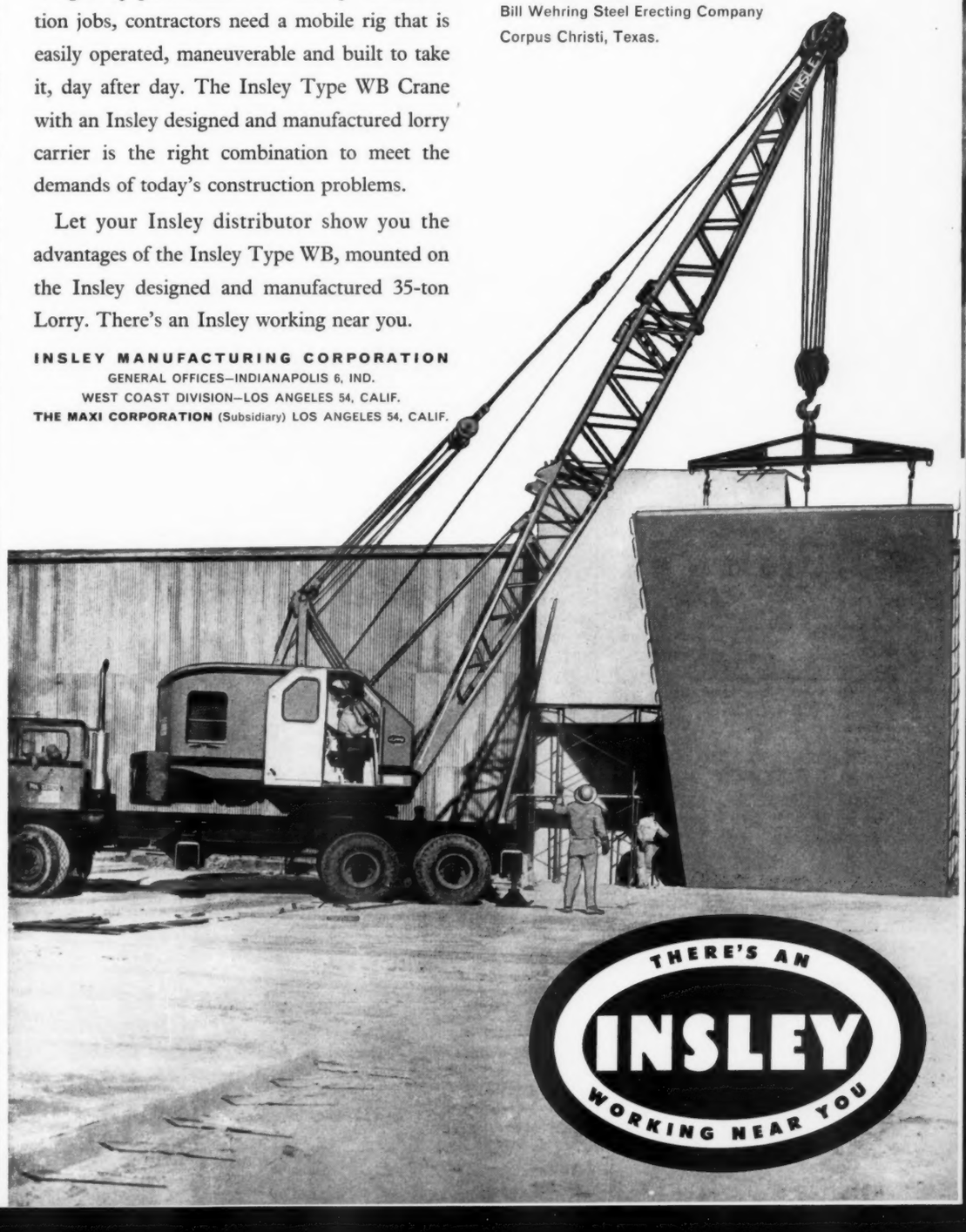
going up faster... with an ALL INSLEY crane

To get top performance on "tilt-up" construction jobs, contractors need a mobile rig that is easily operated, maneuverable and built to take it, day after day. The Insley Type WB Crane with an Insley designed and manufactured lorry carrier is the right combination to meet the demands of today's construction problems.

Let your Insley distributor show you the advantages of the Insley Type WB, mounted on the Insley designed and manufactured 35-ton Lorry. There's an Insley working near you.

INSLEY MANUFACTURING CORPORATION
GENERAL OFFICES—INDIANAPOLIS 6, IND.
WEST COAST DIVISION—LOS ANGELES 54, CALIF.
THE MAXI CORPORATION (Subsidiary) LOS ANGELES 54, CALIF.

Insley Type WB Crane, owned by Bill Wehring Steel Erecting Company Corpus Christi, Texas.



Surveying washington

Uniform geometric design standards are not being applied by states to arrive at their estimates of the cost of completing the Interstate Highway System. These are the findings of an 11-state study conducted by the General Accounting Office.

U. S. Comptroller General Joseph Campbell, who heads the GAO, concludes that the fault lies with the approved standards themselves. He says the study indicates that the national standards are not sufficiently definitive to be applied uniformly throughout the states.

The Bureau of Public Roads disagrees. Its position is that the approved standards are "appropriate" and that the bases used by the states in estimating road costs are "consistent and uniform".

The GAO review was conducted at the request of the Senate roads subcommittee, which wanted data on the accuracy and uniformity of the cost estimates among the several states. The information was needed in connection with the subcommittee's consideration of whether or not to approve the revised Interstate System cost estimates, submitted in January, as a basis for apportioning road funds in fiscal 1960, 1961, and 1962. The revised projections indicated the cost of finishing the entire 41,000-mile Interstate System might run around $40 billion, considerably higher than the original estimate.

The Highway Act of 1956 requires cost estimates submitted by the states to be based on geometric design and construction standards approved by the Secretary of Commerce and applied uniformly to all states. The GAO review appraised this stipulation by undertaking a "factual analysis and comparison of the major design standards and bases of cost on which the estimates of the selected states were developed". The 11 states whose cost estimates were inspected are California, Colorado, Georgia, Illinois, Kansas, New Jersey, New York, Ohio, Texas, Virginia, and Washington.

The study did not attempt to evaluate the validity of the submitted cost estimates, since the primary factors in developing cost estimates are engineering judgments, an area GAO did not explore.

BPR-approved Interstate Highway standards, relating to geometric design, were liberally criticized by the GAO. Such design pertains to the visible dimensions of a road—width and number of lanes, right-of-way, access control, curvature and gradients, and shoulders.

The GAO study points out that these national standards set down in general terms the minimum standards for most of the design elements which affect construction costs, but they do not specify maximum standards. The standards simply state that desirable dimensions higher than the minimum standards are not shown, because it is expected that the designs will generally be made to standards as high as are "commensurate with conditions". Further, it is stated that standards near the minimums will be used in design only where the use of higher standards will result in excessive costs.

GAO wonders out loud how standards without any stated maximum can be applied uniformly throughout the states, as required by law. "Lacking any stated upper limits," the report says, "uniformity cannot be assured . . . since the states are not likely to have the same ideas of how they want to design their highways. Also, we cannot understand how the application of the design range, provided in the approved standards, will produce uniformity when, in fact, there is no range in terms of any maximum dimensions informing the states of limits in design beyond which they cannot go."

GAO says that under present standards "the states are expected to design beyond the minimum standards and in effect the only ceiling would be excessive cost—a relative, indefinite, and variable factor." It added that standards as high as are "commensurate with conditions" produced an "obscure standard at best, open to many different interpretations, and virtually impossible of being applied uniformly throughout the states. . . ."

The report says that variances in design standards found among the 11 states studied show that the approved standards are not conducive, "except by chance", to being applied uniformly.

He moves big yardage on housing development

with two self-loading 7-yd Allis-Chalmers motor scrapers . . . hauling 1,500 to 3,000 feet

K. L. Perry
K. L. Perry Excavating Co.

On a new development location for a big residential subdivision, K. L. Perry Excavating Company of Kansas City, Missouri, has found a new and profitable earth-moving team—two Allis-Chalmers TS-160 motor scrapers. Perry bought them on the basis of a demonstration which proved their maneuverability, speed and ability to self-load. Now the TS-160's have sold him on dependability and economy, too.

One of Perry's self-loaded TS-160's leaves the cut as the other returns to keep up the 1,000-yard-a-day pace on Vineyard Woods job.

Look ahead... *move ahead*...and stay ahead with

by GEORGE RIVEIRE, JR.

BPR's position, on the other hand, is that consistent use by the states of design standards above the bare minimum, in preparing their cost estimates, is fully in accord with the approved national standards and is sound. The Bureau believes that variation in design should not be construed as non-uniformity. It argues that the use of standards above or below the minimum is inherent in applying sound engineering judgments to the designs of the Interstate System.

According to the BPR, specifying an upper dimensional limit for design standards is not only impractical but might be wasteful, inasmuch as there would be a tendency for states to design to maximum standards regardless of the usual engineering and economic criteria. As a practical matter, the Bureau contends, there is an upper limit established by "engineering reasonableness and economics".

GAO was not impressed with this line of argument. Its study found, for instance, that in most of the states the number of lanes on some highway sections was greater or less, in varying degree, than would be provided under the BPR standards for determining lanes. The standards hinge in large part on forecasts of 1975 traffic volume, and the Bureau has laid down suggested procedures for such forecasting. Some states ignored these guides, it was said.

Other GAO findings as to design show that:

1. All 11 states estimated right-of-way widths well beyond the minimum widths contained in the approved standards. In most of these states the widths were about 250 to 300 feet for four-lane highways, compared to the approved minimum of 150 feet.

2. In most states median widths for urban areas varied from 20 to 84 feet, compared to the approved minimum of 16. Medians in rural areas varied similarly.

3. Shoulder widths ranged from 10 to 19 feet for right shoulders and 3 to 10 for left. Approved minimum standards are 10 feet for right shoulders and 3 to 6 feet for left shoulders.

4. Design standards for bridge widths varied among several of the states, and in three the widths differed "considerably" from the approved minimum.

5. Frequency of interchanges in rural areas—a major cost item in the Interstate System—ranged from an average 2.4 miles in New Jersey to 4.9 miles in New York. (BPR has not established specific criteria for distance between interchanges.)

6. Five of the 11 states deviated from BPR's standards for constructing or replacing crossroads, underpasses, and overpasses up to Interstate System standards.

Different versions of unit prices in computing estimates of cost for construction items were found in some states. The unit costs used are supposed to be those prevailing in each state in the second half of calendar 1956.

The report said the costs estimated by the states were overestimated or underestimated "by reason of errors of a wide variety, such as improper unit prices, omissions, and computations". However, GAO doubted most of the "errors" could be considered significant.

A bill for five-year extension of reciprocal trade—of vital interest to manufacturers of construction machinery—now goes to the Senate after passing the House by a vote of 317 to 98. The House victory for the measure, which is a major part of the administration program, was complete. In passing the bill, the House also beat down a substitute two-year protectionist trade bill by a vote of 234 to 147. Clinching the victory was a 286-to-146 vote against recommitting the bill to the Ways and Means Committee.

Senate action on the bill will be closely observed by makers of construction machinery, for approval means that the huge overseas market will be kept open. The importance of foreign business cannot be overestimated; in the case of some manufacturers, sales abroad account for more than 50 per cent of their total sales. While Senate action on the measure still waits, the resounding vote by the House brightens the chances of Senate approval. However, some observers believe the measure will not be passed without modifications.

Short turning radius (less than 25 ft) and positive hydraulic control make maneuvering through tight spots a simple operation for Perry's TS-160's.

The TS-160 is the only motor scraper near its size available with forced ejection and extra high apron lift that assures easy ejection of toughest material.

TS-160's move dirt faster . . . cut operating costs in half

Earth-moving operations in modern housing developments have to move fast to keep costs low . . . and to set the pace for production line methods in home construction. On the Vineyard Woods job, for instance, to maintain the building program, Perry had to average 500 cubic yards per day, hauling up to 3,000 feet.

His two Allis-Chalmers TS-160 motor scrapers handled it with plenty to spare. Self-loading, they frequently topped 1,000-yard production daily. At the same time, operating costs were cut in half compared to his previous equipment. Perry says his Allis-Chalmers motor scrapers are big producers . . . helped him finish contracts days ahead of schedule. He now bids and makes a profit on contracts he couldn't consider before.

Self-loading, compactness and maneuverability make TS-160's naturals for development work

Primary factors in Perry's choice of Allis-Chalmers TS-160's were their demonstrated high-speed and self-loading ability. However, since he's had them, other benefits have become apparent. Perry is particularly pleased with their maneuverability. They turn in less than 25 feet—a valuable timesaver in limited space on many housing development operations. Hydraulic power steering makes maneuvering in tight quarters easy and efficient.

They also save time and money between jobs . . . move on highway at up to 25.4 mph. Operator comfort and ease of handling were noted as outstanding by Perry and his crew.

Performance sold the machines . . . dependability proved their value

K. L. Perry checked them all when he was in the market for high-speed dirt-moving equipment. He says, "We were sold by demonstration that the Allis-Chalmers machines were best—but the real proof came with performance like we had on the Vineyard Woods development in Kansas City. We've had only routine maintenance on the machines in eight months since we bought them. They put us in position to get the 500-home Kentucky Hill job at Independence, Missouri."

This TS-160 motor scraper story is a good example of the value in talking things over with your Allis-Chalmers construction machinery dealer. He knows the earth-moving business and can help you choose the machines that will help you most. Ask him for a demonstration right on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

For more facts, use Request Card at page 18 and circle No. 325

Manufacturer memos

R. S. Littleford, chairman of the board of directors of Littleford Bros., Inc.

J. S. Wadsworth, president of Littleford Bros., Inc.

Littleford elects president, chairman

J. S. Wadsworth and R. S. Littleford have been elected president and chairman of the board of directors, respectively, of Littleford Bros., Inc., Cincinnati, Ohio. Also elected were J. B. Meyer, vice president and treasurer, and J. H. Albers, secretary and assistant treasurer.

Wadsworth was formerly assistant to the general manager. Littleford, the son of the founder of the company which produces blacktop road maintenance and construction machinery, has been actively engaged in the business for fifty years.

Clark president honored

George Spatta, president of Clark Equipment Co., Benton Harbor, Mich., has been awarded honorary membership in the Cooper Union chapter of Pi Tau Sigma, national mechanical engineering honor society. Spatta, a 1914 graduate of the college, was honored for his achievements in industry and his interest in the development of the school.

Thew Shovel appoints C. Turk service manager

Carrol G. Turk has been promoted to service manager of The Thew Shovel Co., Lorain, Ohio. The former assistant to the director of the Parts & Service Division will now be responsible for all service activities on the Lorain line of power shovels and cranes and the Moto-Loader. In addition to this, Turk will continue as technical manager of the Parts & Service Division.

Ralph G. Thibaut, who has been the company's service manager for the past five years, plans to retire in the near future and has moved to Turk's former post. Thibaut will also handle special assignments.

LeT-Wesco names DePolis marketing vice president

LeTourneau-Westinghouse Co., Peoria, Ill., a subsidiary of Westinghouse Air Brake Co., has named Louis A. DePolis vice president in charge of marketing. DePolis directs the firm's sales organization, and supervises and coordinates all marketing and marketing-related activities, including sales promotion, advertising, equipment service, and field engineering.

T. C. I. and subsidiary elect new director

Julius Epstein has been elected to the boards of directors of Trans Continental Industries, Inc., Detroit, Mich., and its subsidiary, Highway Trailer Co., Edgerton, Wis. Epstein is a Chicago investment banker and real estate executive.

Highway Trailer has established a general sales office in the Cafritz Bldg., Washington, D. C. Col. Robert W. Johnson, who heads the office, will supervise all Highway Trailer bids on government and civilian sales. Col. Johnson is in the Air Force Reserve, assigned to the deputy chief of staff of material at Air Force headquarters.

Marlow Pumps appoints

S. R. Schleicher has been made general manager of the Marlow Pumps Division, Bell & Gossett Co., in Midland Park, N. J. He joined the division eight years ago on a special engineering project and later became production manager. Schleicher retains the duties of this post and takes on the added responsibilities of general manager.

Euclid appoints Currence

D. B. Currence has been appointed Southern regional manager for the Euclid Division, General Motors Corp., Cleveland, Ohio. From Atlanta, Ga., headquarters, Currence will direct district representatives in 13 southern states. He replaces Charles B. Pace, who resigned to establish a Euclid dealership in Kansas.

D-A Lubricant promotes

James H. Coover has been promoted to vice president, production and research, by D-A Lubricant Co., Inc., Indianapolis, Ind., manufacturer of lubricants for heavy-duty construction machines. Coover was formerly manager of production and research.

High Production at Low Cost!

Back Filler *for Trenches... Curbs... Road Shoulders*

- SAVE MANPOWER
- COMPLETE JOBS FASTER
- MOVE TO JOBS QUICKER
- REDUCE EQUIPMENT NEEDS
- BID MORE JOBS

Simple hitch for all standard trucks and semi-trailers. Easily changed from left to right side discharge.

Maintain traffic while spreading sand, aggregate and hot mix for road widening, shoulder work and back filling.

Standard Model 600 delivers material up to 4' from pavement. Back fills trenches at an average rate of 180 tons per hour with only one operator.

Model 605 has 42" wide strike-off box that is adjustable for shoulder work to 5' width. Lays material uniformly with clean edges. Box removable for back filling.

Model 610 back fills high curbing and ditches up to 8' from pavement. Adjustable elevation . . . extension easily removed for ordinary work.

Write or phone for specifications and prices now!

POWER-PACK CONVEYOR CO.
(Glenville 1-7670)
13910 ASPINWALL AVE. CLEVELAND 10, OHIO

For more facts, use Request Card at page 18 and circle No. 326

THIS*
is the Completely Re-Designed
MONATCO
Asphalt
HEATER-PLANER

NO SMOKE — Strict control over both primary and secondary air results in soft reducing flame. Uniform heat of 2000° F. softens and conditions the asphalt, but DOES NOT burn it.

NO DANGER OF FIRE — Monatco's new, exclusive design puts main drive engine, auxiliary engine for fuel and air pumps, and fuel tanks OUT OF the heat zone. Two fuel cut-offs for extra safety.

All parts in heat zone subject to heat damage are water-cooled.

Open frame with grill lets heat rise straight up from hood.

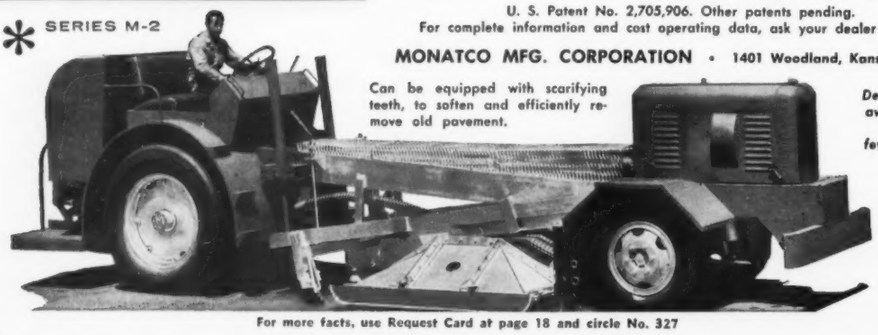
Standard automotive parts throughout. Model M-2: 15 forward speeds, 8 ft./min. up to 25 mph. Model M-2A: with Allison Torque Converter, both forward and reverse speeds are infinitely variable from 0 to 25 mph. Fuel capacity 280 gal., enough for 10 hrs. heaviest planing.

Heats and planes in one operation, 80" wide, up to 1" deep, with a thoroughness and economy never before found in any road maintaining machine or combination of machines. *Actual records show costs as low as .10 per yard.*

U. S. Patent No. 2,705,906. Other patents pending.
For complete information and cost operating data, ask your dealer or write:

MONATCO MFG. CORPORATION • 1401 Woodland, Kansas City, Mo.

* SERIES M-2



Can be equipped with scarifying teeth, to soften and efficiently remove old pavement.

Dealership available in a few areas

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Issue

J. D. Morris, sales manager of Allis-Chalmers' new Utility Tractor and Equipment Sales Department.

A-C names sales manager of new department

The Allis-Chalmers Mfg. Co., Milwaukee, Wis., has appointed J. D. Morris sales manager of the new Utility Tractor and Equipment Sales Department. Products from the new department will be sold through dealers for the Construction Machinery, Engine-Material Handling, and Farm Equipment divisions.

Richard L. Engel has been appointed manager of the Pacific region for the firm's Industries Group. A member of the firm since 1939, Engel has been manager of the group's Los Angeles district for the past five years.

Donald E. Steele, Allis-Chalmers' manager of petroleum and chemical sales at Los Angeles, takes over Engel's former post.

Alexander Dreisin has been made chief engineer of the firm's Fuel Injection Department at the Harvey, Ill., works. He has been with the Micromatic Hone Corp., Detroit, Mich., as chief engineer of its Micro-Precision Division, Evanston, Ill. A-C recently acquired certain assets of this particular division.

N. W. Landis has been named manager of the Northeast region, which comprises New York and the New England states.

Union Wire Rope names Lacy vice president

George P. Lacy has been appointed vice president and general sales manager of wire and wire-rope products at Union Wire Rope Corp., Kansas City, Mo., subsidiary of Armco Steel

George P. Lacy, vice president and general sales manager of wire and wire-rope products for Union Wire Rope.

Corp., Middletown, Ohio. Lacy succeeds L. G. Schraub, who has retired from active duty with the company, but continues on a consulting basis.

At the same time, J. H. Hatch has become president and general manager of the firm. Hatch succeeds M. G. Ensinger, who has retired but will continue as chairman of the board. Maurice B. Hansell, Jr., fills Hatch's former position as vice president and production manager.

P&H appoints Cunningham

Henry Cunningham has been appointed a district sales representative for Harnischfeger Corp., Milwaukee, Wis. Working out of Cleveland, he will handle the complete P&H line of excavators, etc.

Construction Machinery names regional managers

Edward R. Daley, Paul Weideman, Charles D. Blake, and Charles P. Homann have been appointed regional sales managers for the Construction Machinery Co., Waterloo, Iowa. Daley is in charge of the Western territory, which includes all states west of the Mississippi, except Iowa, Minnesota, and North and South Dakota.

Weideman will cover the North Central and Southeastern territory; Blake, the East Central area; and Homann, who also manages CMC export sales from New York City, will handle the Northeastern territory.

Roebling names Stansbury

John A. Roebling's Sons Corp., Trenton, N. J., a subsidiary of The Colorado Fuel & Iron Corp., has named Lloyd F. Stansbury West Coast supervisor for its Construction Materials Division, to succeed the late Robert J. Cole. Headquartered in the firm's San Francisco district offices, Stansbury is in charge of the division's sales in the 11 western states, Alaska, and the Hawaiian Islands.

Massey-Ferguson news

Bill Talmage has been promoted to general industrial sales manager for Massey-Ferguson Industrial Division, Wichita, Kans. Talmadge was formerly central regional industrial sales manager for the division, which produces Work Bull tractors, tractor loaders, Davis loaders, etc.

Go right into the mud if you're driving with a non-slip differential

Why leave your pick-up 500 yards from the job when a simple, low-cost option . . . available on most standard pick-ups and station wagons . . . will bring you right up to where the graders are working? Called by many names, this revolutionary new non-slip differential automatically applies the power to the wheel that has the greater traction. Whether you're in mud, snow, ice, sand, or loose gravel, if you have any traction at all, you move.

See your dealer. Ask for a demonstration of the new non-slip differential. Any patch of ice or mud hole will show you what it will do. And, when you consider the time-saving convenience of the non-slip differential . . . you'll know it's a bargain. For further information, write Dana Corporation, Toledo 1, Ohio.

DANA Spicer

DANA CORPORATION • TOLEDO 1, OHIO

DANA PRODUCTS Serve Many Fields:

AUTOMOTIVE: Transmissions, Universal Joints, Propeller Shafts, Axles, Powr-Lok Differentials, Torque Converters, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Clutches, Frames, Forgings, Stampings.
INDUSTRIAL VEHICLES AND EQUIPMENT: Transmissions, Universal Joints, Propeller Shafts, Axles, Gear Boxes, Clutches, Forgings, Stampings.
AVIATION: Universal Joints, Propeller Shafts, Axles, Gears, Forgings, Stampings.
RAILROAD: Transmissions, Universal Joints, Propeller Shafts, Generator Drives, Rail Car Drives, Pressed Steel Parts, Traction Motor Drives, Forgings, Stampings.
AGRICULTURE: Universal Joints, Propeller Shafts, Axles, Power Take-Offs, Power Take-Off Joints, Clutches, Forgings, Stampings.
MARINE: Universal Joints, Propeller Shafts, Gear Boxes, Forgings, Stampings.
Many of these products manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario.

For more facts, use Request Card at page 18 and circle No. 328

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Cable controller—a brochure on the UNCO cable controller for Caterpillar DW20 and DW21 scrapers. According to the literature, the unit acts only when needed, is completely automatic in operation, and can be installed in 3 to 4 hours. Illustrated with photographs.

Write to the U. N. Co., Inc., Dept. C&E, 1255 Boylston St., Boston 15, Mass., or use the Request Card at page 18. Circle No. 171.

Soil-sampling kit—an illustrated folder describing a kit containing 12 different soil-sampling tools for recovering accurate samples of almost any material except bedrock. The folder contains pictures of each tool and describes its use; also illustrates the ready portability of the kit.

Write to the Acker Drill Co., Inc., Dept. C&E, P. O. Box 830, Scranton, Pa., or use the Request Card at page 18. Circle No. 121.

Forming accessories—literature describing Superior forming accessories for bridge abutments, approaches, grade separations, interchanges, and decks. Covers form ties, deck hangers, screed supports. Photographs, specifications. Bulletin No. BB-458.

Write to Superior Concrete Accessories, Inc., Dept. C&E, 9301 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 53.

Off-the-road-tires—a 52-page illustrated booklet on getting maximum service from off-the-road tires. Discusses four factors within control of the equipment operator: load, inflation, operating conditions, and tire care. Also describes B. F. Goodrich's complete line of off-the-road tires, and carries data on load, inflation, weights, measures, and tire specifications for 1957 motor graders, self-propelled scrapers, and tractor-drawn scrapers. Valve and rim information.

Write to the B. F. Goodrich Tire Co., Dept. C&E, 500 S. Main St., Akron, Ohio, or use the Request Card at page 18. Circle No. 170.

Versatile material handler—a bulletin on the Kwik-Mix Model R-18 Moto-Bug, a multipurpose material-handling tool. Shows the Moto-Bug equipped as a 1,500-pound-capacity fork lift; 18-cubic-foot 3,000-pound-capacity gravity dump hopper or tailgate dump truck; and as a 42×54-inch platform deck, also with a 3,000-pound capacity. Condensed specifications.

Write to the Kwik-Mix Co., Division of Koehring Co., Dept. C&E, 235 W. Grand Ave., Port Washington, Wis., or use the Request Card at page 18. Circle No. 161.

Hydraulic rail clamps—an illustrated brochure detailing the design, construction, and operation of the new Mead-Morrison hydraulic rail clamps. Contains views of installations on unloading bridges and towers; sectional drawings; dimensional charts. Covers both the single and double-rail models, with capacities of up to 100 tons. Form SH-8.

Write to the McKiernan-Terry Corp., Mead-Morrison Division, Dept. C&E, 313 Manor Ave., Harrison, N. J., or use the Request Card at page 18. Circle No. 85.

Dome slab forms—a booklet describing Ceco Steeldomes for use in forming "waffle-type" two-way dome slab construction. Contains complete tabular data covering sizes available and voids created. Data on erection procedure; drawings of typical arrangements; on-the-job photos; tables of design factors. Manual No. 4007.

Write to the Ceco Steel Products Corp., Dept. C&E, 5601 W. 26th St., Chicago 50, Ill., or use the Request Card at page 18. Circle No. 100.

Generators, flasher lights—an illustrated catalog detailing specifications, service, and maintenance data on the Pacific Mercury line of generators and flasher lights. Contains information on how to select a generator for specific applications, as well as data on accessory equipment.

Write to Pacific Mercury, Dept. C&E, 14052 Burbank Blvd., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 168.

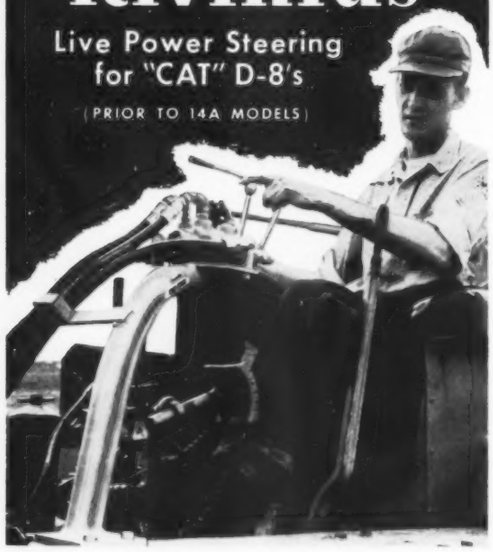
Tractor shovel—a catalog describing the construction and operating characteristics of the Nelson Model 200 tractor shovel. Illustrated with action photos. Form 582.

Write to N. P. Nelson Iron Works, Inc., Dept. C&E, 850 Bloomfield Ave., Clifton, N. J., or use the Request Card at page 18. Circle No. 8.

Steel—a booklet describing how Crucible specialty steel products meet design and application requirements in heavy-duty construction machinery. Illustrated with photographs.

Write to the Crucible Steel Co., of America, Dept. C&E, P. O. Box 88,

NEW! LOW COST!
Rivinius
Live Power Steering for "CAT" D-8's
(PRIOR TO 14A MODELS)



TIME-SAVER: Operators report they can operate D8's one, sometimes two speeds faster with hydraulic, finger-tip control Rivinius Live Power Steering. Levers move only 1½"; return automatically when released.

MAN-SAVER: Operator fatigue goes down...performance goes up! Rivinius Live Power Steering provides closer, faster control of D8 power and maneuverability.

CLUTCH-SAVER: On each turn, the D8's clutches are engaged smoothly into complete seizure...engagement and disengagement is positive for no wasteful slippage and clutch wear.

DOLLAR-SAVER: This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, valve, pump, reservoir, hoses, brackets and hardware.

SEE YOUR CATERPILLAR DEALER NOW OR WRITE

Rivinius, inc.
EUREKA, ILLINOIS

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The MOST USEFUL Equipment You Can Buy!

Hoffco H.D.
(Heavy-Duty)
BRUSHCUTTER

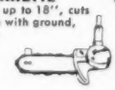
CUTS WEEDS, REEDS, BRAMBLES.
CLEARS SAPLINGS
FELLS SMALL TREES

You'll handle "problem" clearing easier, better and faster than ever before—with the Hoffco H. D. BRUSHCUTTER. Here is sturdy, practical equipment that is just right for your kind of work. With the Hoffco H. D. Brushcutter one man can do the work of five men using old-fashioned hand tools. One 5 h.p. unit and 3 attachments take care of everything. Fast, efficient. Perfectly balanced—no strain on operator. Used everywhere by tree surgeons, highway and forestry departments, etc. Hoffco originated this type of equipment and Hoffco leads the field. Your Hoffco dealer is anxious to give you a demonstration. Write us for his name.

WEED BLADE
Easy-to-use rotary type weed cutter cuts close to ground, on hillsides, fence rows, rocky terrain.

BRUSHCUTTER
Levels flush to ground all glass, brush, brambles and trees up to 5" in diameter and over. Ideal for dense "problem" clearing. Powerful 10" circular blade.

SAWETTE
Fells trees up to 18", cuts snags even with ground, limbs and prunes. Bucks firewood.



Hoffco.inc. RICHMOND, INDIANA

For more facts, circle No. 330

attention contractors

STERLING
announces
A BRAND NEW LINE OF
SELF PRIMING PUMPS
completely re-engineered
completely re-designed
a full line

attention distributors:
ADDITIONAL REGIONAL WAREHOUSES, STOCKING UNITS AND PARTS, HAVE OPENED SELECTED DISTRIBUTOR TERRITORIES. DISTRIBUTOR PROFITS WILL BE ASSURED BY NATIONAL ADVERTISING, DIRECT MAIL, AND TRADE PROMOTIONS—SO JOIN THE GROWING FAMILY OF STERLING DISTRIBUTORS NOW!
Send this ad with name and address, or full information:

STERLING MACHINERY COMPANY
1950 SANTA FE AVE, LOS ANGELES 21, CALIF.
850 WOODRUFF LANE, ELIZABETH, NEW JERSEY

For more facts, circle No. 331

Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 169.

Equipment cabs—literature illustrating and describing the line of Campbell cabs for tractors, graders, rubber-tire loaders, and other rigs. Construction, safety features listed.

Write to the Campbell Detachable Cab Co., Dept. C&E, Wauconda, Ill., or use the Request Card at page 18. Circle No. 122.

Materials testing—literature on Testlab materials-testing devices. Features a power soil sampler that can be carried and operated by one man, and can operate in almost any kind of soil to a depth of 15 feet. Data on sieves, sieve shaker, asphalt oven, and various other testing aids.

Write to the Testlab Corp., Dept. C&E, 250 W. 57th St., New York 19, N. Y., or use the Request Card at page 18. Circle No. 52.

Diazotype reproduction—an illustrated booklet describing the Copyflex diazotype reproduction process. Explains the various types of direct-positive prints possible with the process, and points out how the use of Copyflex reproducible reproductions (intermediates) can save time, expense, and work in engineering, drafting, and reproduction departments.

Write to the Charles Bruning Co., Inc., Dept. C&E, 1804 W. Central Road, Mount Prospect, Ill., or use the Request Card at page 18. Circle No. 72.

Truck size, weight restrictions—the revised new 1958 edition of "Truck and Trailer Size and Weight Restrictions", a pocket-size booklet compiling the laws of all 48 states and the District of Columbia that regulate size and weight of trucks and trailers.

Write to the Four Wheel Drive Auto Co., Dept. C&E, Clintonville, Wis., or use the Request Card at page 18. Circle No. 167.

Floor-resurfacing material—a bulletin describing Nacor Minit-Set industrial floor resurfacer and patcher. According to the literature, Minit-Set can be used without interrupting production or traffic, and can withstand 50,000-pound loads immediately after application. Form NMS.

Write to the National Asphalt Corp., Dept. C&E, Bulkley Bldg., Cleveland 15, Ohio, or use the Request Card at page 18. Circle No. 166.

Bituminous paver-finisher—a bulletin on the Blaw-Knox rubber-tire Express Paver. Illustrations include close-up photos of major components. Data on optional equipment. Specifications. Bulletin No. 2632.

Write to the Construction Equipment Division, Blaw-Knox Co., Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 162.

Land-forming equipment—a folder describing the complete line of Gurries land-forming equipment. Features the firm's field planer, now available in sizes up to 100-foot effective leveling lengths. Also describes Gurries levelers available in sizes to 14 feet, and the new 5-cubic-yard hydraulic scraper. Text in English or Spanish; drawings, photographs.

Write to the Gurries Mfg. Co., Dept. C&E, 1720 S. First St., San Jose 12, Calif., or use the Request Card at page 18. Circle No. 90.

Lightweight-aggregate concrete—a brochure of photographs and job stories showing the wide variety of uses for lightweight-aggregate concrete. Cites the role played by Pozzolith in providing adequate workability for proper placement while maintaining sufficient strength to meet structural requirements.

Write to The Master Builders Co.,

(*Continued on next page*)

The Most Portable Water Cooler Available!

Flat back makes it easy to carry

Flat back mounts flush on truck!

Keep cool drinking water readily available anywhere on your job with a Parco Dispensit—finest water cooler on the market.

- Completely insulated — keeps water delightfully cool.
- Stainless steel inside — sanitary and easy to clean.
- Zinc coated exterior — aluminum enamel finish.
- Recessed spigot — can't be knocked off, easily removed for cleaning.
- Available in 3 sizes — 4, 6, and 8 gallons.

Contact Parco *now* for immediate delivery.
A few exclusive distributorships still available.

PARCO PRODUCTS Pennsburg Pennsylvania

For more facts, use Request Card at page 18 and circle No. 332

Remove LIME and MORTAR Safely and More Effectively with the new substitute for muriatic acid.

"SAF-T-KLENZ" MASONRY CLEANER

With the present architectural practice of combining masonry and metals in construction, it is imperative that precautions be taken to protect materials from damage during cleanup.

SAF-T-KLENZ MASONRY CLEANER has the cleaning action of strong liquid acid but, unlike muriatic acid, will not injure or discolor brick, stone, glass, aluminum, stainless steel or copper. It has an extremely low corrosion rate with a pH value of 5.2.

SAF-T-KLENZ MASONRY CLEANER comes in dry powder form, is easy to handle and transport. There are no cumbersome, breakable carboys to return for credit.

SAF-T-KLENZ MASONRY CLEANER eliminates the possibility of painful burns. In its dry powder form it will not injure the skin.

SAF-T-KLENZ MASONRY CLEANER solution is easy to use. It is rapidly applied with a brush in the usual manner, and the surface flushed when clean. It need not be handled in a cautious and time-consuming manner as with many acids.

SAF-T-KLENZ MASONRY CLEANER can be safely used to dissolve encrusted mortar from mixers and shovels.

SAF-T-KLENZ MASONRY CLEANER generates no strong, harmful fumes.

SAF-T-KLENZ MASONRY CLEANER saves a lot of money in the longer service obtained from ropes, ladders, scaffolds and brushes.

"SAF-T-KLENZ" MASONRY CLEANER

Comes in 75, 150 and 400-pound drums

Write for free literature

DEALER INQUIRIES INVITED

BERMAN *Chemical Co.*
1928 NORTH 12th ST.
TOLEDO 4, OHIO

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YOU'LL GET UNHEARD-OF VALUE

in the ROGERS Top Value Trailer

CAPACITY 25 TONS—WEIGHT ONLY 9000 LBS.

TOP VALUE In Light Weight—
Weighs only 9000 pounds to rate 25 tons capacity with a liberal factor of safety through the use of high strength alloy steel.

TOP VALUE In Low First Cost—
Made possible by long, specialized experience—advanced engineering—unexcelled facilities and volume production.

TOP VALUE In Basic Requirements—
Rogers—pioneer builders—know basic requirements and how to build them into trailers.

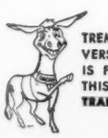
TOP VALUE In Wide Adaptability—
Open type bed permits the handling of the greatest variety of loads.

TOP VALUE In Easy Loading—
The "beaver tail" extension permits easier loading and the handling of longer loads.
The flat, unobstructed gooseneck supports blades, buckets, etc.

TOP VALUE In Easy Handling—
Rogers correct weight distribution combined with light weight assures easy hauling at lower cost.

TOP VALUE In Fast, Easy Braking—
assured by Rogers standard brakes—widely recognized for high efficiency, safe action and long wear.

TOP VALUE In Returns On Investment—
Save four ways—in first cost—in lower fuel cost—in longer brake service—in low maintenance cost.



TREMENDOUS VERSATILTY TOO IS FEATURED IN THIS ROGERS TRAILER

Get Complete Information—Be Surprised And Pleased At The Advanced Construction And Low Cost.

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Experience Builds 'em Rogers Heavy Duty Trailers Performance Sells 'em

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Division of American-Marietta Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 38.

Tractor-scrapers—a booklet featuring actual job reports showing production and cost for Caterpillar DW15-No. 428 tractor-scrapers. Many photographs illustrate the text. Form D829.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 74.

Air hoists—an illustrated bulletin on Thor H-1000 air hoists. Includes tables on rate of ascent and descent under various load conditions and air pressures. Bulletin 2367.

Write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 34.

Directional control valves—illustrated literature on Parker Series VDP1 12-gpm hydraulic directional control valves for mobile equipment. The units, featuring low pressure drop, are designed to provide top metering characteristics in raising, positioning, rotating, holding, or lowering operations. Pressure drop curves and drawings for 1-spool, 2-spool, 3-spool, and 4-spool models.

Write to the Parker Hydraulics Division, Parker-Hannifin Corp., Dept. C&E, 17325 Euclid Ave., Cleveland 12, Ohio, or use the Request Card at page 18. Circle No. 114.

Mobile radio equipment—a booklet for prospective users of mobile radio equipment. Lists the benefits of such equipment, and includes information on licenses for base stations, mobile units, and for drivers. Also contains instructions concerning adjustments, how to send a message, and maintenance. Written in non-technical language.

Write to Section P, General Electric Communication Products Department, Dept. C&E, Electronics Park, Syracuse, N. Y., or use the Request Card at page 18. Circle No. 76.

To obtain any of the literature described in this section, circle the indicated number on the handy Request Card at page 18.

Tractor shovel—a booklet covering the design, engineering, construction, and operating features of the Allis-Chalmers HD-6G tractor shovel. Data on interchangeable attachments; photographs and drawings; specifications.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 63.

Concrete equipment—a catalog covering the complete line of Stow concrete equipment. Includes universal electric vibrators, 60-cycle motor-in-head vibrators, power midget vibrators, gasoline-operated vibrators, rotary trowels, portable concrete grinders, ceiling grinders, and vibrating screeds. Also complete do-it-yourself directions for building prestressed screed beam. Catalog 580.

Write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 66.

Alidades—a pocket-size booklet on the use and adjustment of alidades. Contains tables by which the field man can obtain horizontal distances and elevations from stadia readings. Covers exploration and map making, detailed instructions on stadia surveying, use of the Beaman stadia arc, and many other subjects.

Write to the Alidade Dept., W. & L. E. Gurley, Dept. C&E, 518 Fulton St., Troy, N. Y., or use the Request Card at page 18. Circle No. 95.

Steel and wire—a well illustrated catalog on the application and benefits of USS steel and wire products. Covers the use of both materials in reinforced-concrete pavement, as highway guardrails, and in prestress work, tunnels, and bridges. Photos, drawings, graphs, and charts.

Write to the American Steel & Wire Division, U. S. Steel Corp., Dept. C&E, 1420 Rockefeller Bldg., Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 29.

Asphalt-paving equipment—a brochure describing Barber-Greene asphalt-paving equipment. Mixers, dryers, batch towers, gradation units, others. Also contains brief descriptions of the firm's ditchers, portable conveyors, loaders, and car unloaders. Action photos.

Write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the R quest Card at page 18. Circle No. 26.

Concrete floor hardener—a bulletin on Emeri-Topcrete for concrete floor surface hardening. An estimating table shows amounts required to surface-harden areas from 100 square feet up. Photographs show actual installations, as well as the step-by-step procedure of application.

Write to the Walter Maguire Co., Dept. C&E, 60 E. 42nd St., New York, N. Y., or use the Request Card at page 18. Circle No. 3.

Truck rear axles—a folder describing the new line of International heavy-duty rear axles. Illustrated with a 2-page cross-sectional view of the company's new single-reduction axle. Form CR-320-H.

Write to the International Harvester Co. Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 165.

Bottom-dump motor wagon—a booklet describing the Allis-Chalmers TW-360 bottom-dump motor wagon. Action photographs, drawings, specifications. Catalog MS-1269.

Write to the Construction Machinery Division, Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 164.

Portable rotary drills—a catalog describing the complete Davey line of portable rotary drilling equipment. Over-all rig photos, sectional views of individual operating mechanisms, and action pictures. Form E-270.

Write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 73.

Fifth wheels—a comprehensive catalog on fifth wheels from the Holland Hitch Co. Covers types, parts,

DRY IT OUT WITH
ROME DISK PLOWING HARROWS!

Heavy rain last night — mud this morning? A few hours cutting and aerating the site or haul road with a crawler tractor and Rome Disk Plowing Harrow can save the day! On the cut a Rome loosens and dries material to full scraper-blade depth, facilitating loading. On the haul road, it fills in ruts, helps dry out the slick surface. The Rome Disk Plowing Harrow can be hitched or unhitched from the tractor drawbar in *seconds*, immediately releasing the tractor for other work.

Rome Disk Plowing Harrows are ideal contractors' machinery for blending in-place materials or soils, for stablizing road shoulders, dam fills or bridge sites. These multi-purpose machines can reduce your equipment investment, cut operating costs, speed up production.

Rome Disk Plowing Harrows can speed up land clearing, too, cutting out brush and springy young trees too flexible for efficient 'dozer work.

Your Rome-Caterpillar Dealer will gladly help you select the machine you need for your project. See him soon!

ROME PLOW COMPANY, Cedartown, Georgia

Rome Disk Plowing Harrows

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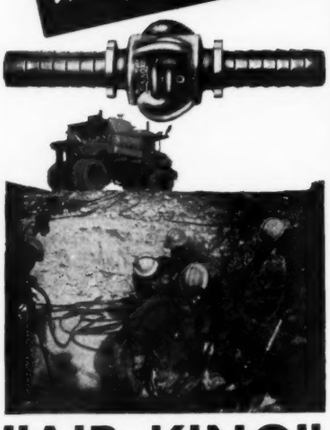
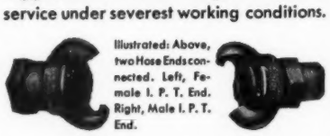
Quick Action...and Tight, Pressure-Proof Connections



"AIR KING"
Quick-Acting, Universal
HOSE COUPLING

FOR COMPRESSORS, ALL TYPES OF AIR TOOLS, WATER, OIL AND SPRAY SERVICE

This versatile coupling is built along plain, rugged lines to assure long, trouble-free service under severest working conditions.



Illustrated: Above, two Hose Ends connected. Left, Female I. P. T. End. Right, Male I. P. T. End.

The "Air King" will reduce operating costs wherever quick connections are required. Locking heads are identical for all sizes of hose or threaded ends within the coupling's size range, and are locked by pressing together and applying a quarter-turn. Equipped with patented Safety Locking Device. Bronze or rustproofed malleable iron, in sizes up to 1".

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO. LTD. TORONTO Associate Companies

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installations, care, and operation. Generously illustrated with photographs, dimensional drawings. Catalog FW-8.

Write to the Holland Hitch Co., Dept. C&E, Bouman Square, Holland, Mich., or use the Request Card at page 18. Circle No. 64.

Tractor shovel—a booklet describing the new Case 4-wheel drive, rear-wheel power-steer tractor shovel, designated W-9 Terraload'r. Complete specifications and illustrations of job applications are included. Bulletin CTS-111.

Write to the J. I. Case Co., Dept. C&E, Racine, Wis., or use the Request Card at page 18. Circle No. 44.

Highway hazard warning—a comprehensive new manual on highway hazard warning, put together with the cooperation of leading insurance companies, and state and federal highway authorities. Includes recommendations on Dietz portable lanterns, torches, and electronic flashers. Illustrated with photographs and diagrams.

Write to the Hazard Warning Lighting Division, R. E. Dietz Co., Dept. C&E, 225 Wilkinson St., Syracuse 1, N. Y., or use the Request Card at page 18. Circle No. 56.

Dredges—a bulletin describing six basic types of Ellicott dredges, as well as the firm's Dragon line of standardized portable hydraulic dredges. Application data; information on special equipment. Illustrated with photographs and drawings. Bulletin 935.

Write to the Ellicott Machine Corp., Dept. C&E, 1611 Bush St., Baltimore, Md., or use the Request Card at page 18. Circle No. 115.

Portable two-way radio—a bulletin on the new GE portable two-way radio with completely transistorized receiver. Covers sensitivity, receiver design, audibility, standby drain, and field servicing. Also shows the unit's versatility in various types of applications in the 25–54 mc or 144–174 mc bands. Bulletin ECR 566A.

Write to the General Electric Communication Products Department, Dept. C&E, Electronics Park, Syracuse, N. Y., or use the Request Card at page 18. Circle No. 109.

Tractor loaders—a folder describing Caterpillar Traxcavators and attachments. Discusses the wide variety of applications of the Traxcavator line. Action photographs. Form No. DE822.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 9.

Electric heaters for hot-mix—a bulletin describing the benefits of Chromalox electric heaters in improving the quality and reducing the cost of asphalt paving. Includes case-history-type stories, and is illustrated with photos and drawings.

Write to the Edwin L. Wiegand Co., Dept. C&E, 7500 Thomas Blvd., Pittsburgh 8, Pa., or use the Request Card at page 18. Circle No. 28.

Truck mixers—an illustrated booklet describing 5, 6, and 7-cubic-yard Blaw-Knox Hi-Boy truck mixers. Specifications; data on optional equipment. Bulletin No. 2622.

Write to the Construction Equipment Division, Blaw-Knox Co., Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 112.

Asphalt surface seal—a pamphlet describing Jennite J-16, a surface seal for asphalt pavements. Lists major causes of asphalt deterioration, and explains how these can be stopped with the Jennite seal. Also discusses application methods. Illustrated with photographs. Form LL-2992.

Write to Maintenance Inc., Dept. C&E, W. Liberty St. Extension, Wooster, Ohio, or use the Request Card at page 18. Circle No. 68.

Rippers, dozers, snowplows—a brochure on the Omsteel line of snow-removal, light dozing, and ripping equipment for Caterpillar motor graders and tractors. Action photographs; close-ups of main components; specifications.

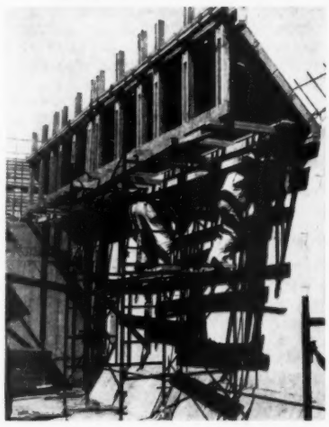
Write to Omaha Steel Works, Dept. C&E, 609 S. 48th St., Omaha, Nebr., or use the Request Card at page 18. Circle No. 94.

Base spreader—an illustrated fact sheet on the Model 90 Jersey Spreader for use with tractors equal in size and power to the Cat D6, Allis-Chalmers HD-6G and HD-9, and International TD-14. Lists construction and operating characteristics, specifications.

Write to the Tractor Spreader Co., Dept. C&E, 630 Terrace Ave., Hasbrouck Heights, N. J., or use the Request Card at page 18. Circle No. 39.

(*Continued on next page*)

Gang Forming Licks "Y" Wall Problem



Pays Off in Quality Pours, Speed and Reduced Costs

2,665 lineal feet of "Y" walls and half "Y" walls, with 16'9" high walls on tank addition to sewage treatment plant—that was the pouring problem faced by contractors, Wander & Mason of Worthington, Ohio. They solved the problem by pouring the walls in three lifts with the forms ganged for the final "Y" and half "Y" pours.

On the "Y" walls Symons panels, fillers and bay corners were ganged in 16-foot sections. One 16-foot outside section was stripped, moved to the next wall section and reset by three men in 20 minutes.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Information on Symons products is available upon request. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. G-8, Chicago 39, Illinois.

MORE **SAVINGS** FROM **SYMONS**

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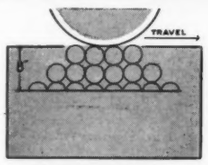
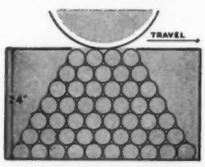


CONVENTIONAL STATIC COMPACTION

Static rollers, relying on weight alone, produce friction forces between soil particles causing bridges to form. Terrapacs break bridges for deep compaction.



TERRAPAC DYNAMIC COMPACTION

Vibratory energy breaks frictional forces binding soil particles together, allows soil to sift down producing uniform densities at greater depths.

A Terrapac Roller Hits 95% Modified Density in 2-3 Passes on Federal Contract in California

When Fresno Paving Co. was awarded the Federal contract for recompacting the slopes and bottom of the Madera irrigation canal, between Madera and Fresno, (for the Bureau of Reclamation) William C. Wehner and Frank Pozar chose the CH-30 as the most efficient and economical compaction tool for the job. . . . 80,000 yards of canal lining had to be ripped to a depth of 9"-12" and recompacted to 95% Modified density. . . . The soil varied, with a large proportion of it clay, with volcanic ash, shale and large rock present. . . . The slopes were 20-23 feet deep and ranged in angle between 1:1 and 2:1. . . . Using a dragline, the 95% density was obtained in 2 or 3 passes. . . . In addition, the roller "buried" the rock and left a smooth, polished surface. . . . Mr. Wehner also said, "The CH-30 saved the job for us." Testimonials are wonderful, but we suggest that you satisfy yourself by asking for a Terrapac CH-30 demonstration today!

Ad 41-54

VIBRO-PLUS VB TERRAPAC

VIBRO-PLUS PRODUCTS, Inc.

STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES!

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Fork-Lift Trucks—a catalog covering the construction and operating characteristics of Allis-Chalmers FT series fork-lift trucks. Generously illustrated with photographs and drawings.

Write to the Allis-Chalmers Mfg. Co., Engine-Material Handling Division, Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 12.

Conveyor belts—a brochure to aid in choosing, ordering, and inspecting the proper type of Hamilton conveyor belting. For ordering belting for a new application, a complete worksheet is included. Data on the many types of conveyor belts is available from the firm.

Write to the Hamilton Rubber Mfg. Corp., Dept. C&E, Meade St. at Prince, Trenton 3, N. J., or use the Request Card at page 18. Circle No. 19.

Power rammer—a brochure describing the British-built Johnson Maxtamp power rammer. Lists the machine's many features, including built-in automatic lubrication, positive carburetion, and operator safety. Illustrated with a cutaway drawing of the unit, and on-the-job photos. Specifications included.

Write to the Complete Machinery & Equipment Co., Inc., Dept. C&E, 36–40 11th St., Long Island City 6, N. Y., or use the Request Card at page 18. Circle No. 15.

Wire rope—a 36-page handbook on the use and care of wire rope. Explains how to select the correct rope for specific needs; methods of socketing, splicing, and installation; and important points on safety.

Write to the Wire Rope Corp. of America, Dept. C&E, Box 229, St. Joseph, Mo., or use the Request Card at page 18. Circle No. 5.

Washing, classifying equipment—a comprehensive catalog of Eagle washing and classifying equipment for sand, gravel, and crushed stone. Generously illustrated with photos and dimensional drawings. Specifications included. Catalog 58.

Write to the Eagle Iron Works, Dept. C&E, 129 Holcomb Ave., Des Moines, Iowa, or use the Request Card at page 18. Circle No. 27.

Welding wire—an 84-page pocket guide on welding wire for use with the Aircomatic welding process. Presents a variety of wire types, wire diameters, and packaging information. Also contains data on chemical composition, mechanical properties, and operating procedures. Form ADC 873.

Write to the Air Reduction Sales Co., a division of the Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 31.

Truck-mixer loading plant—a bulletin on the Blaw-Knox Uni-Rect Model 200–222 truck-mixer loading plant. Highlights the plant's factory-assembled units, pre-assembled batching equipment, and bin compartmentation. Illustrations show six steps in assembly of the Uni-Rect, a 200-ton-capacity plant. Bulletin No. 2631.

Write to the Construction Equipment Division, Blaw-Knox Co., Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 35.

Equipment hauler—a fact sheet on the Miller Model BT 10-ton tandem-axle tilt-top trailer. Data on optional equipment. Photographs, dimensional drawing, specifications.

Write to Miller Tilt-Top Trailer, Inc., Dept. C&E, 450 S. 92nd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 36.

Sign—a brochure containing installation procedures, bid specifications, and general information on the new Tassco aluminum increment-sheet sign said to be of special value on major highways, expressways, and turnpikes. Data on construction, methods of erection, wind loadings. Dimensional drawings; graphs. Brochure 58R.

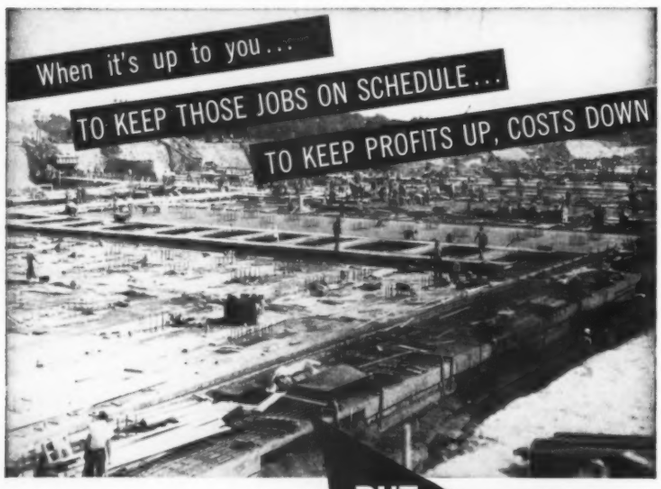
Write to the Traffic & Street Sign Co., Dept. C&E, 84 Foundry St., Newark 5, N. J., or use the Request Card at page 18. Circle No. 24.

Truck mixers—a well illustrated catalog detailing the construction and operating characteristics of Transcrete truck mixers. Close-up photos of main components, full views, line drawings.

Write to the Construction Machinery Co., Dept. C&E, 447 Vinton St., Waterloo, Iowa, or use the Request Card that is bound in at page 18. Circle No. 43.

Automatic truck transmissions—a folder describing Allison fully automatic transmissions for Chevrolet, Dodge, Ford, and GMC trucks. Illustrated with photographs.

Write to the Allison Division, General Motors Corp., Dept. C&E, P. O. Box 895, Indianapolis 6, Ind., or use the Request Card at page 18. Circle No. 37.



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ABSENTEEISM—you know what it can do to your schedules, how it slows operations, boosts costs, cuts into profits. AJAX *complete* drinking water service, helps in three ways to reduce absenteeism, keep lost time to a minimum.

Safety messages — imprinted free on AJAX (or AERO) Cups do help reduce lost-time accidents by constant reminder of the routine precautions we are all so prone to neglect.

Clean, crisp AJAX Cups — the most sanitary way to provide drinking water — reduce hazard of contagions like the common cold that cost industry 300,000,000 lost man-hours per year.

Comfort and convenience of AJAX Cups encourages adequate water intake — vital to peak efficiency — boosts worker morale, is actually the most time-saving way of providing clean drinking water.

Why don't you take advantage of the three-way protection offered by AJAX *complete* drinking water service?

GET THE FULL STORY Ask your contractors' supply house or paper merchant for samples of imprinted AJAX Cups and equipment and folder giving complete details. Or write to

AJAX® CUPS and Drinking Water Tanks deliver fresh water to workers — mean less time lost on the job. 4 oz., 6 oz. and 7 oz. cups, imprinted with assorted stock safety messages at no extra cost — or your own message to order. AJAX Cups and Dispensers are ideal for use with any tanks, barrels or pipeline faucets.

United States Envelope Company
General Offices: Springfield 2, Massachusetts
15 Divisions from Coast to Coast
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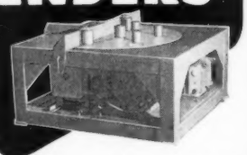
MONARCH
HEAVY DUTY
Reinforcing Steel
BENDERS



Dealers! Model 25

There's a Monarch Reinforcing Steel Bender for every concrete job. These ruggedly built, high production benders are in top demand. Models like the #25 pictured above—bends heavy stock up to 2½" diameter—the 9S Stirrup Bender for reinforcing steel up to No. 9 bar, and the 15R Radial Bender that bends steel up to 2" diameter at 95 ft. per minute. WRITE or PHONE for prices, folder and complete details on dealership.

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Since 1910
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Phone: CA 7-0631

GIANT SCAFFOLDS on the job!

Here's the answer... for any type construction requiring extra long, strong scaffolding. It's Duo-Safety's new, aluminum AS2H Scaffold, shown here in one of its many applications. Designed throughout for extreme ruggedness, for maximum safety. Ideal for buildings, bridges, air line work, offshore drilling—wherever length and strength are important. MODEL AS2H is available in a variety of sizes —any practical length over 35 feet. Choice of wood platform or non-slip grip strut.

Write For New "Ladders for Construction" Catalog No. 89-C, showing the complete Duo-Safety line of ladders and scaffolds.

DUO-SAFETY
LADDER CORPORATION
513 W. Ninth Avenue, Oshkosh, Wisconsin
Send me the "Ladders for Construction" Catalog.
NAME _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____
For more facts, use coupon or Request Card at page 18 and circle No. 340

An aerial view of the Brooklyn, N. Y., harbor shows new pier 11, right foreground, which is the first of 10 piers built by the Port of New York Authority under its $85 million redevelopment program of two miles of Brooklyn waterfront.

New York Port Authority opens first of 10 piers in redevelopment program

The $8,250,000 Pier 11 in Atlantic Basin, Brooklyn, N. Y., was dedicated last month by the Port of New York Authority and leased for 10 years to the Maersk Line. The pier is the first of ten to be completed under an $85 million redevelopment program of two miles of Brooklyn waterfront.

Pier 11 is able to accommodate four of the Maersk vessels along its 2,100-foot-long wharf. Adjacent to the wharf is a single-story cargo terminal building, 150 feet wide and 1,800 feet long, providing 270,000 square feet of covered space. The asphaltic-concrete floor of the building will support 500 pounds per square foot.

The terminal building is of steel frame, with corrugated aluminum walls and aluminum roofing. There are 29 doors on the wharf side, each 18×18 feet. On the land side are 27 doors, each 14 feet high and 18 feet wide, opening onto a 20-foot-wide truck platform which accommodates up to 144 trucks, simultaneously. Behind the building is 319,000 square feet of paved open area to facilitate the storage and handling of cargo.

Target Central news

Target Central Corp., Kansas City, Mo., has appointed Leon Baker vice president in charge of the distribution of its Target masonry and concrete saws, and abrasive, safety, and diamond blades. He will cover Ohio, Michigan, Indiana, Kentucky, and West Virginia.

C. I. T. opens division

C. I. T. Corp., New York City industrial financing firm, has opened a division office in Boston, Mass. Donald E. Kidd, vice president of the firm, is in charge of the new office. Kenneth E. Dougherty, recently named an assistant secretary of the firm, is also connected with the Boston branch.

Parsons transfers Harvey

Parsons Co., Division of Koehring Co., Newton, Iowa, has transferred John Harvey from its North-Central District to District 4, which covers Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Oklahoma, Tennessee, and eastern Texas.

F/S OPTICAL PLANIMETER
Model 236/A
Eyestrain and parallax in contouring the figure are eliminated by the optical tracer. No need for subtracting the initial reading or adjusting the counting wheel manually.
• Tracing lens providing large magnification
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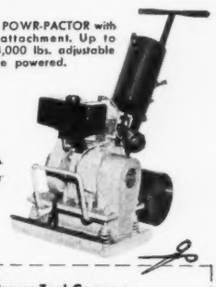
MAGINNISS POWR-PACTORS

patch asphalt faster!

Maginniss *vibratory* compactors speed placing and patching of blacktop . . . are easily moved from job to job . . . work fast, at speeds up to 50 ft. per minute. Water feed prevents asphalt adhesion . . . assures smooth finish.

Put Maginniss Powr-Pactors to work on your blacktop jobs. The increased production, lower costs and small initial investment will surprise you. Call your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio. AA-7621

MODEL PP-18 POWR-PACTOR with water feed attachment. Up to 7,000 vpm, 4,000 lbs. adjustable force, gasoline powered.



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154 Distl Ave., Mansfield, Ohio
Yes, I want to know more about the Powr-Pactor for asphalt work.
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address _____
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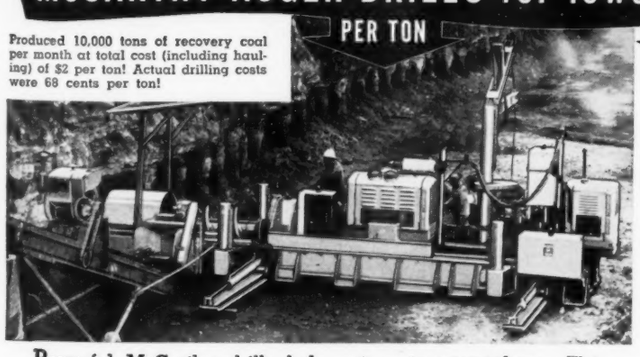
McCARTHY AUGER DRILLS for lowest cost PER TON PER FOOT

Produced 10,000 tons of recovery coal per month at total cost (including hauling) of $2 per ton! Actual drilling costs were 68 cents per ton!



Powerful McCarthy drills help cut costs everywhere. The newest coal recovery units have finger-tip control of auger rotation and horizontal feed of drill. Operators have produced recovery coal for as little as $2 per ton, including make-ready, operation, maintenance, depreciation and hauling . . . actual drilling cost 68 cents per ton. The McCarthy is self-moving, all hydraulic and requires just two operators. Conveyor can work from either side. Choose from twelve models. Bulletins M-101 and M-102 give complete information. Write for them now.

Manufacturer of Drilling Equipment Since 1901

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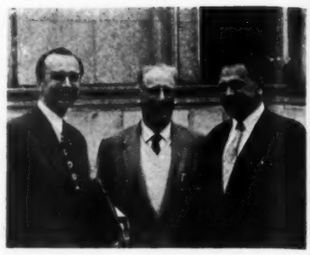
Model 106-24. World's fastest. Augers deeper, larger holes than any other. Speed reducer slows rotation for hard rock holes. Drills 8" and 9" dia. holes in shale and sandstone. Up to 24" in softer formations.

For more facts, use Request Card at page 18 and circle No. 342

Publishers postscript

In this column last month I used a letter Editor Bill Quirk sent us from Berlin where he was attending the Third International Congress of Prestressed Concrete. From that meeting, he went on to visit seven European countries as part of a Concrete Industries Study Tour. At the conclusion of the group tour, Bill left for Poland and sent us the following from:



C&E editor Bill Quirk, flanked by Jerzy Kawecki (left) and Walery Iwanowski, both directors of industrial and building construction, Poland.

Warsaw, June 8, 1958

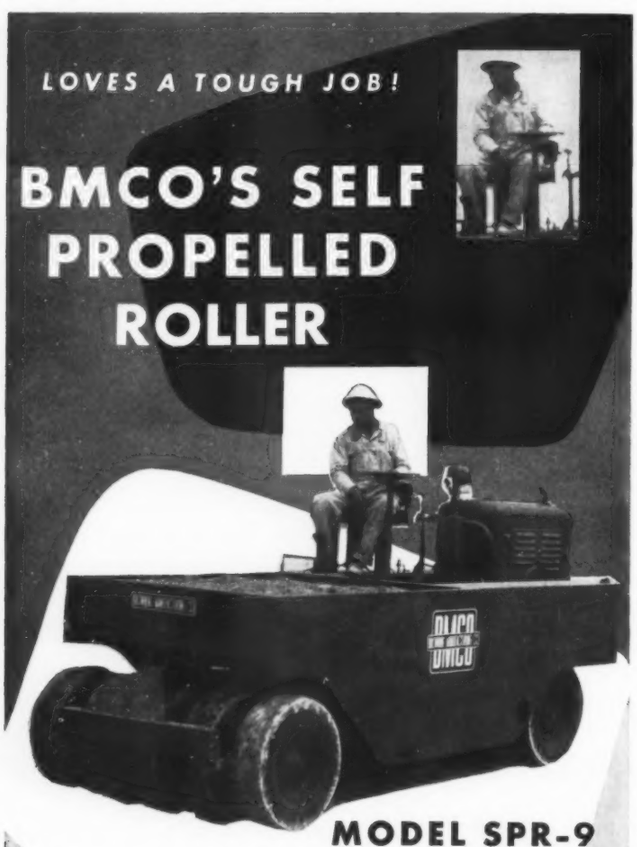
After eight full days in Poland, I could compare the Poles to a colony of American beavers building a dam. As we know, the forces of man and nature deter the beaver not a whit from accomplishing the construction of the wood and mud structure that protects his home. Nor have the terrible ravages of war stopped the Poles from rebuilding their homeland. You might even call it re-rebuilding, for the Poles have often had to construct the same thing not once but twice. Take for instance the 600-meter (1,968-foot) steel bridge over the Vistula River at Plock, about 60 miles northwest of Warsaw on the great plain of eastern Europe. Within eight years the Poles built a bridge three times at this site. Original construction was completed in 1938, only to be destroyed a year later when the Germans invaded Poland and bombed the bridge. Under the German occupation the Poles reconstructed the bridge in 1941. Then when the Germans were driven out of Poland in 1944, they demolished the structure before they left. Once more the Poles picked up their tools and did the job over again in 1945–1946. The noteworthy feature of the Plock bridge was that the same group of Polish engineers worked on the bridge each time.

On this particular bridge, the Poles used the same plans over and over, and merely duplicated the design and construction of the original steel span. This was because of the urgent need to get a crossing over the Vistula as quickly as possible to speed the passage of people and goods. On the reconstruction of other bridges—there were 20 destroyed over the Vistula River alone—the Poles modernized the structures, making them wider and with greater load capacity. This past week I visited one such project at Warsaw where a new two-decker is being built over the Vistula, upper deck for vehicles, lower deck for trolley cars. This span is a combination of structural steel and prestressed concrete, with a tunnel section at each approach for a total length of 600 meters. When this bridge is completed next year, it will be the fifth span over the Vistula at Warsaw. Four more structures are now in the planning stage for the nation's capital city. Warsaw is growing rapidly, and these future bridges will be needed for the increasing traffic.

On the subject of transportation, the Central Office of Public Roads in Poland, as part of its highway program, is modernizing narrow water-

LOVES A TOUGH JOB!

BMCO'S SELF PROPELLED ROLLER



MODEL SPR-9

All wheels oscillate on this exclusive BMCO design . . . giving more perfect compaction. It is impossible to overload any one tire! All wheels act independently . . . each bearing its share of the load. Four speeds forward—Four speeds reverse.

MODEL SPR-9B

The same specifications as the SPR-9, except: a smaller power unit and heavy duty industrial type clutch . . . however, this power unit is still more powerful than all others in its class . . . same 4 speeds forward . . . same everything as in the "deluxe" model, but approximately $1,000 less.

OTHER QUALITY ITEMS IN THE BMCO LINE:

PNEUMATIC ROLLERS · ROCKBUSTER · 50 TON COMPACTORS · SHEEPSFOOT ROLLERS · VIBRATING ROLLERS

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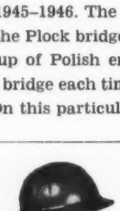
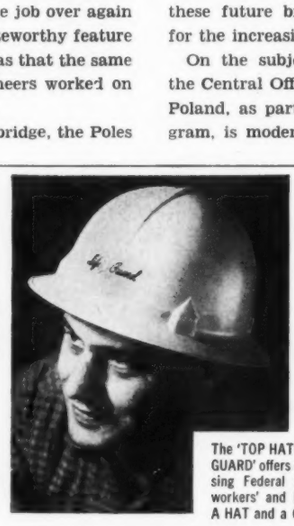
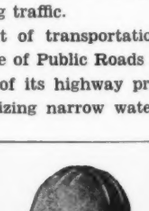


Jackson FIBER GLASS HATS and CAPS surpass all Federal tests for construction workers' safety hats. In eight standard colors, others in quantities.

COMBINATIONS of Safety Caps available with welding helmets, goggles, face shields.



The 'TOP HAT' for Safety . . . Jackson's 'LIFE GUARD' offers unequaled protection by surpassing Federal Specifications for construction workers' and Edison Institute tests as well. A HAT and a CAP in white, yellow, and grey.



The Jackson 'ALUMIHAT' complies with Federal Specifications except electrical resistance. Heat-treated aluminum, with soft satin finish.

tops

• TOPS IN COMFORT

To men who wear safety hats all day long, comfort is important. Jackson hats and caps fit well and bear smoothly and evenly on the head.

See how little it takes to fit the headband to clearly marked hat sizes. And, being easy to fit, men will fit these hats accurately, so they stay on better in windy weather. Chin straps and winterliners are also available.

The polyethylene headband is smooth and flexible, yet firm enough to hold its shape. A soft-backed leatherette sweatband fits all around.

• TOPS IN STYLE

They protect without looking bulky and have a well designed, uncluttered look. Easy to clean, they keep their shiny, smooth finish.

• TOPS IN SAFETY

Thorough comparative testing against published industry-accepted standards proved that Jackson's three types of safety hats, each in its own class, offer an extra margin of safety. They should be your choice.

Jackson Products

AIR REDUCTION SALES CO., A DIVISION OF AIR REDUCTION CO., INC.

31739 Mound Road, Warren, Michigan

Sold through Welding Supply and Safety Dealers

For more facts, use Request Card at page 18 and circle No. 345

bound macadam roads by widening them and putting down a plant-mix, black-top surface. The widening from 5 to 7 meters (23 feet) meets international standards. Low grade, farm-to-market dirt roads are also being improved by putting down a soil-cement stabilized base and topping that with a tar surface-treatment. Pavement widths on these secondary roads is 5 meters (16.4 feet). On one such job near Wolomin, I found an old Seaman Pulvimixer working steadily as it mixed the soil-cement base.

The Poles could make use of our modern roadbuilding equipment. Right after the war, for instance, the Krakow District of Public Roads had nine 8-yard Tournapulls, which it used to move ½-million cubic yards of dirt a year. In the work they were doing these machines were estimated to have a useful life of about three years. But now, more than ten years later, five of these Tournapulls are still going strong, the other four having been "cannibalized" to supply parts for the rest. Production has been cut nearly in half, of course, so the Poles would welcome the opportunity to acquire some modern earth-movers and also compacting equipment. Rollers of all kinds are so scarce that much of the compaction of fills is left only to the dirt-hauling equipment, or else it is done by hand. This usually means that a road must wait a year after grading operations before the pavement is laid to permit natural settlement.

In the field of prestressed concrete, where heavy and higher-priced equipment is not essential, Polish engineers have produced many structures of daring and imaginative design in bridges, buildings, and various types

Warsaw's prestressed ski slide.

of structures such as a cantilever roof for a sport stadium or a ski slide in Warsaw. I have visited several plants in Poland where various precast or prestressed concrete members are manufactured. The chief products are building elements, for Poland has a tremendous amount of construction to do, particularly in large housing projects.

I enjoyed a holiday Thursday, the religious feast of Corpus Christi. In Poland, predominately Catholic, this day is also a legal holiday. Did some sightseeing around Krakow, the medieval capital of the old kingdom of Poland, and the Wawel Castle; also visited Zakopane, a summer and winter resort village like our Sun Valley or Lake Placid. Outside Krakow has sprung up a new city, Nowa Huta, an urban center planned to house the thousands of workers employed in the new steel mills and allied heavy industry. Prior to October 1956, the word was that there was no place for a church in this modern, neatly laid out, socialist city. The new administration that came to power in that October uprising, however, has a more liberal and realistic appraisal of history and people. A vast square near the center of Nowa Huta has been set aside for a new church. In the middle of this square a wooden cross has been planted, garlanded with flowers. Construction will begin as soon as building materials are available.

Couldn't get in to the Artur Rubenstein piano concerts here. Seats have all been sold out months in advance. Did hear a good production of "Carmen" in Polish, and just saw the Poles advance in the Davis Cup tennis competition by nosing out Mexico, 3–2. Admission prices much lower than those at home. Best seats at the tennis match—25 zlotys, and at the opera—30 zlotys. At the official rate of 24 zlotys to $1, these seats were bargains for about $1 and $1.25.

Best regards,
Bill

From what Bill writes us, and from his film we've been processing here, we should be featuring in the months ahead some interesting illustrated articles on European construction.

Don Buttenheim
PUBLISHER

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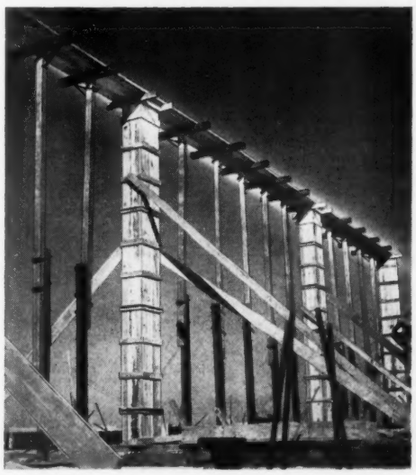

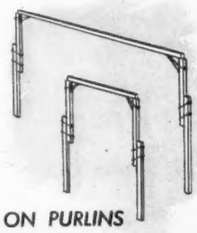

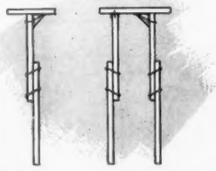

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BY SWITCHING TO THE ELLIS HEAD!

. . . and you'll get hundreds of uses instead of 10 or 15

Ellis Methods offer the contractor greater profit through tremendous savings of labor. Simply attach an Ellis Head Clamp to a head—or purlin, as the case may be—and leave it on for hundreds of uses. The shore slips easily in or out of the clamps, so the upper shore member is not tied up all the time in a tee-shore and can be used other ways. Heads, shores, and all members stack nicely and do not waste space. We feel sure you will like the LABOR economy of our methods . . . and there are substantial material savings, too!

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Send me, without obligation, more details on the Ellis Head Clamp for use on heads, purlins, etc.
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Construction camera

Excavation starts for the Tishman Building in Cleveland, and the Bucyrus-Erie dragline dumps to a White dump truck. This will be the second major new office building in downtown Cleveland.

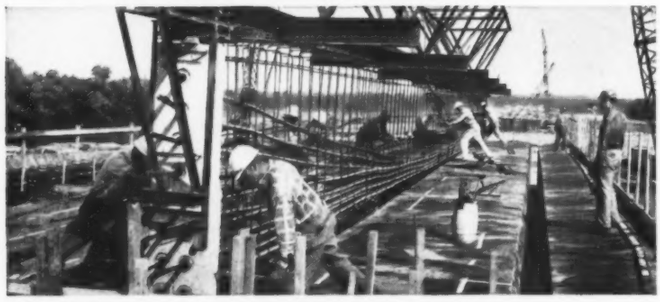
The huge base of a blimp mooring mast is assembled with help from a Lorain crane. The bases are scheduled to be used by air defense units at Lakehurst, N. J., and Akron, Ohio.

A new refinery is rising next to an existing on Atzcapotzalco, Mexico. A Manitowoc crane is p ing gin poles during installation of some of heavier units at the new plant.

CUT PRODUCTION TIME AND COST ON POST-TENSIONED JOBS!

The Wolcott Avenue Bridge in Connecticut illustrates how a contractor's know-how, together with the use of Freyssinet post-tensioning methods, reduces production time and cost. Merritt-Chapman & Scott completed the 14 cast-in-place spans, each 120' long, months ahead of schedule. *Intercontinental Equipment Co. supplied the post-tensioning stressing components.*

Full details on the Wolcott Avenue job and our prestressing materials and equipment are available now. Your inquiry is invited.



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Contractors and Engineers

Magazine of Modern Construction

470 Fourth Ave., New York 16, N. Y.

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Brunner & Lay opens New Mexico plant

Brunner & Lay Rock-Bit of Asheville, Inc., Asheville, N. C., has a new plant at 2224 Broadway S. E., Albuquerque, N. Mex. A complete stock of carbide Rok-Bits, Intra-Set and conventional drill rods, bit couplings, adapters, extension steel, and allied products will be available.

Cleaver-Brooks appoints division sales manager

William F. Zunker has been made sales manager of the Industrial Boiler Division of the Cleaver-Brooks Co., Milwaukee, Wis. He will work with the firm's 58 sales outlets in the United States and Canada. For the past three years, Zunker has been assistant to the sales manager.

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Salesmen wanted to headquarter in vicinity of Los Angeles, Oklahoma City, Okla., Jacksonville, Fla., and New York, to sell roofing and construction equipment for nationally known Eastern manufacturer expanding its sales activities. Each territory will include several states. Opportunities in growing business for ambitious individuals. Send experience in resume to Box 510, CONTRACTORS AND ENGINEERS, 470 Fourth Ave., New York, N.Y.

STOP *that* WATER

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs. Applied quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

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CONSTRUCTION CASTINGS OF

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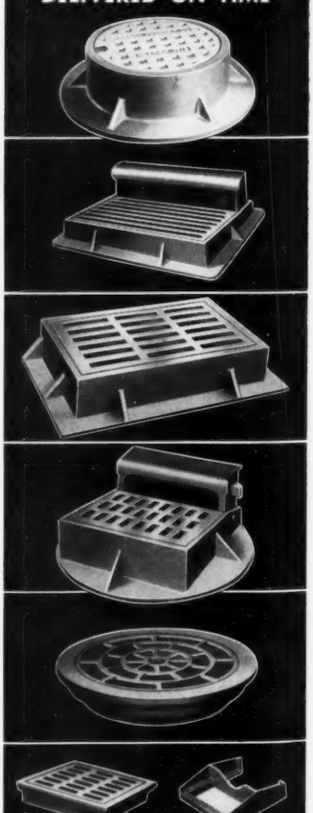
★ SUPERIOR FINISH
★ SOLID VALUE
DELIVERED ON TIME



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For more facts, circle No. 350

One of the first jobs for the Port Charlotte home development north of Punta Gorda, Fla., is done by a Huber-Warco 5D-190 grader. The rig is spreading marl-content subbase for an access roadway. It is estimated that the development will have some 270,000 units in a 150-square mile-area.

Tight quarters do not hinder this International Drott TD-6 Four-in-One, working in an area with only 8 feet of clearance during modification of a building in High Point, N. C. Coltrane-Graham Construction Co., High Point, is removing about 250 cubic yards of dirt every 8-hour day.

BEAT "DOWN-TIME" WITH Hobbs HOUR METERS

For better performance and longer service, get protective maintenance done ON TIME! Hobbs Hour Meters indicate to the HOUR and MINUTE when maintenance and service functions are due — at a glance.

FOR DIRECT CURRENT

Indicates operating time on all types of equipment powered by internal combustion engines — gasoline or diesel. Tells when lubrication, oil and filter changes, overhaul, etc. are due. Not a revolution counter, but a true electric timing instrument. Ruggedly built . . . easy to install . . . reads at a glance.

FOR ALTERNATING CURRENT

Indicates operating time of any equipment powered by alternating current — motor generating sets, conveyor systems, etc. Small, compact, easy to install. Designed and built for years of service.

●Distributors in Principal Cities
WRITE FOR CATALOG 600

JOHN W. Hobbs CORPORATION A DIVISION OF STEWART-WARNER SW
2067 YALE BLVD.
SPRINGFIELD, ILLINOIS

For more facts, circle No. 351

Oliver names manager of industrial division

J. E. Carr has been promoted to manager of the industrial division of The Oliver Corp., Chicago, Ill. With headquarters at the firm's Cleveland, Ohio, plant, Carr will direct all sales activities in the United States and Canada for the company's full line of industrial crawler and wheel tractors, and allied equipment.

Carr was formerly manager of the company's Des Moines, Iowa, sales branch.

Owatonna Tool names district sales manager

Lee Gilbert has been appointed district sales manager for Southern California and Arizona by the Owatonna Tool Co., Owatonna, Minn. Gilbert, who takes over the post held by the late Floyd Parker, has been a factory representative.

This Thin Wall Bit CAN EASILY MEAN EXTRA PROFITS TO YOU

Hoffman Bit cuts costs on reinforced concrete drilling job

HOFFMAN Thin Wall CORE BITS

Fast, easy drilling through hardest materials such as reinforced concrete, fused quartz, etc. make Hoffman Thin Wall Bits ideal for foundation sampling, drilling mounting holes or for conduit openings. They drill holes to exact size the first time . . . eliminate digging, chipping, forming . . . speed the work . . . save on extra materials and equipment. Surface Set or Impregnated . . . in standard O.D. sizes from 1" to 12" . . . Hoffman Thin Wall Core Bits assure true drilling accuracy and economy.

A Hoffman Bit cut right through the steel bars and heavy aggregate to produce this core from reinforced concrete.

Drilling Experts Since 1902

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Box 426 Punxsutawney, Penna.

For more facts, use Request Card at page 18 and circle No. 352

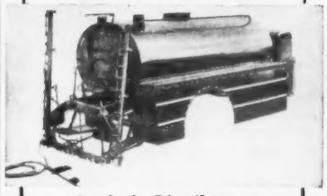
Grace ASPHALT AND COMPACTION EQUIPMENT

Roadsweepers,

Sheepsfoot rollers

Chip spreaders

Circulating asphalt heaters



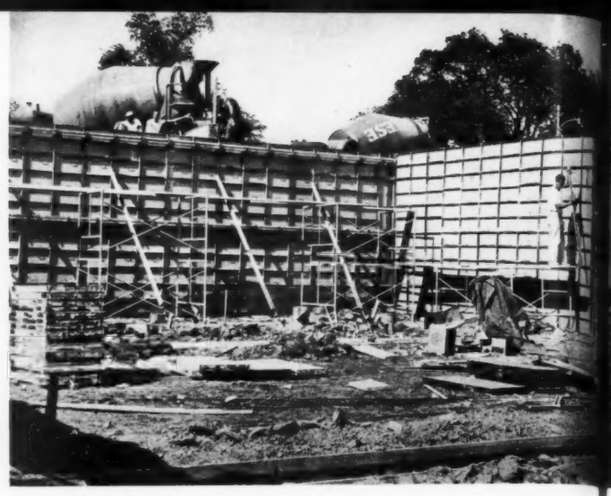
Asphalt Distributors

Pneumatic rollers, self-propelled or trailed

W. E. GRACE MFG. CO.
6003 S. Lamar St. ● Dallas, Texas
For more facts, circle No. 353

Construction camera

Dredging near Grand Haven, Mich., marks the start of 1958 maintenance dredging of Michigan's rivers and harbors by the 215-foot U. S. government hopper dredge Hains. The dredge has a hopper capacity of 720 cubic yards and is equipped with Westinghouse electric motors and 20-inch-diameter discharge pumps.



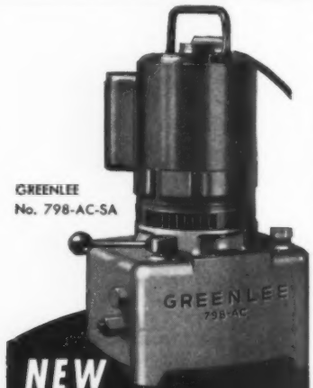
Foundation walls 10 to 12 feet high are poured for a building in Wichita, Kans. Some 3,000 square feet of Symons steel-ply panels were used for the job by Caro Construction Co., Wichita. Work started on a Wednesday afternoon; the final pour was completed the following Monday afternoon.

Duff-Norton names district sales manager

Donald J. Wallace has been named district sales manager of Duff-Norton Co., Pittsburgh, Pa., manufacturer of industrial lifting jacks and hoists. From headquarters in New York City, Wallace directs sales activities in the general industrial field for the firm's Jack Division and the Coffing Hoist Division in metropolitan New York City, New Jersey, Delaware, eastern Pennsylvania, and Maryland.

Teco designs truss for motel roof

A new typical design of a roof truss suitable for motels has been issued by the Timber Engineering Co. It offers clear-span, trussed rafter roof framing, plus custom engineering for motel roof structures. Copies of the design, No. 682, are available on request to designers and builders, from Timber Engineering Co., located at 1319 18th St. N. W., Washington 6, D. C.



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FAST-APPROACH HYDRAULIC PUMP
for pipe benders, rams, jacks, and other tools

two-speed action saves time, money

The new GREENLEE No. 798-AC-SA Hydraulic Power Pump operates GREENLEE pipe benders *three to five times faster* than a hand pump and increases speed of other hydraulic tools comparably. Exclusive GREENLEE fast approach, with automatic change-over to lower speed high-pressure drive, eliminates costly waiting time, makes numerous jobs go faster and easier. Electric motor-driven pump develops 6,000 psi continuous pressure, up to 10,000 psi intermittent. Same performance available in ac-dc and gasoline motor models.

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Please send illustrated Bulletin E-223 on Greenlee No. 798-AC-SA Portable Hydraulic Power Pumps.

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OPEN TRENCH FAST

. . . with specialized Brunner & Lay asphalt cutters

Brunner & Lay 3" CHISEL

Brunner & Lay ASPHALT CUTTER

Breaking a top of asphalt is a fast moving job with Brunner & Lay Asphalt Cutters or 3" Chisels. They are your most efficient tools for cutting asphalt and similar materials, line cutting and scoring concrete. Their ruggedness assures you of many hours of work both before and after being properly reconditioned. Sizes to fit all standard breakers. Delivered from warehouses and dealers nation-wide. Send for NEW, complete catalog #756. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill., *76 progressive years.* Plants & warehouses: Philadelphia, Asheville, Birmingham, Dallas, Albuquerque, Denver, Los Angeles, Sacramento, Portland, Seattle, Montreal.

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CARBIDE ROK-BITS • INTRA-SET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & EXTENSION STEEL
PNEUMATIC TOOL ACCESSORIES • MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, ETC.

For more facts, use Request Card at page 18 and circle No. 355

SINGLE ACTING PILE HAMMERS

Heavy blows — low rate of speed — for driving big, heavy piles steadily and surely — and for driving any pile through heavy, rubbery soil — Sets and meets single-acting specifications—write for details!

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McKIERNAN-TERRY CORP.
82 RICHARDS AVE., DOVER, N. J.

For more facts, circle No. 356

Rails serve as uprights to support a semicircular tunnel liner for a 940-foot-long automobile tunnel being constructed through the San Gabriel Mountains in Calif. The rails, supplied by L. B. Foster Co., and the reinforcing bars are placed first; then the space is filled with rock, and the whole surface solidified with gunite.

Simultaneous dozing and compacting on a fill are done by a Michigan Model 180 tractor-dozer with compactor wheel attachments. The dozer-compactor averages between 99 and 104 per cent compaction in two passes during relocation of 14 miles of Route 224 west of Wadsworth, Ohio.

Owens-Corning appoints road materials manager

Richard S. Ringwalt has been promoted to the newly created position of product manager of highway materials for the Owens-Corning Fiberglas Corp., Toledo, Ohio. Working from the company's New York City office, Ringwalt will be responsible for the marketing of specialized Fiberglas products, as well as end products produced by the company's customers for all phases of highway construction.

Sales representative named by Yale & Towne

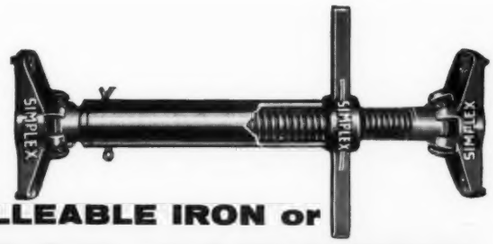
James O. Wine has been appointed district sales representative for the Trojan line of tractor shovels produced by the Contractors Machinery Division, Yale & Towne Mfg. Co., Batavia, N. Y. From headquarters in Allentown, Pa., he will cover the middle Atlantic states, New England, and eastern Canada.

Goodyear names three in production organization

The Goodyear Tire & Rubber Co., Akron, Ohio, has appointed John Q. Shaul director of production for Goodyear-Great Britain. He replaces Howard L. Ginaven, who assumes Shaul's former post as superintendent of Akron Plant Two. Richard E. Ward, formerly division foreman in Goodyear's Akron Plant One, has been appointed manager of plant engineering and maintenance at the Wolverhampton plant in England.

Timken elects two

Herbert E. Markley and Richard L. Frederick have been elected vice president and assistant to the president, respectively, of the Timken Roller Bearing Co., Canton, Ohio. Markley's duties include responsibility for all foreign operations of the firm. Frederick, succeeding Markley in his former post, was previously the firm's director of industrial relations.



MALLEABLE IRON or

DROP FORGED?

Rugged dependability suggests that you insist on the best — Simplex *drop forged steel* trench braces.

Ball and socket joints at each end for tight grip at any angle. Blunt lever nuts or 3-way nuts — nail holes in both screw and butt ends. Furnished with or without pipe.

Simplex drop forged steel trench and timber braces *cost no more* and better eliminate the danger of cave-ins and costly re-digging.

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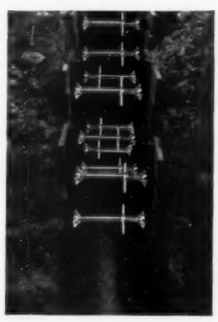

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SIMPLEX JACKS

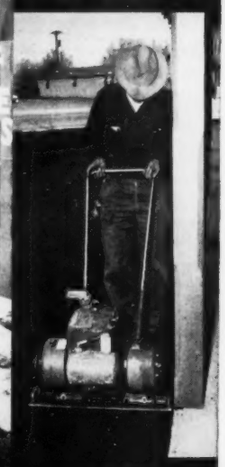
RE-MO-TROL UTIL-A-TOOL JENNY ROL-TOE

TEMPLETON, KENLY & COMPANY
2511 Gardner Road
Broadview, Illinois

For more facts, use Request Card at page 18 and circle No. 357

ON ASPHALT—These pictures show the Barco Vibra-Tamp working on asphalt surfacing at an Arizona motel. It moves along, self-propelled, at a uniform rate with minimum effort required of operator.

built to handle MORE JOBS!



VIBRA TAMP

The Versatile **BARCO**—

Here's why users like the Barco VIBRA-TAMP:

MANY USES! The handiest small machine you ever used for tamping, compacting, and smoothing sand, gravel, soil, cinders, chips, cement and soil mixtures, and asphalt surfacing. Use it in restricted areas, close to walls, around posts, in trenches, for patch jobs and clean-up jobs, leveling of areas around footings, smoothing sub-base fill for slab floors, inside foundations and countless other places!

QUALITY CONSTRUCTION—Definitely superior value. Tough, rugged, dependable, and simple, yet precision-built for long life and freedom from maintenance. Comfortable operating handle.

ECONOMICAL—Low initial cost; low operating cost. Easy to move anywhere. No special tools required. Saves your bigger, costlier equipment. ORDER YOUR VIBRA-TAMP NOW. *Catalog No. 630 on request.*

MAXIMUM COMPACTION *for*

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2. **Bituminous Surfacing**

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- Rugged Construction . . . good everywhere men work!
- Galvanized inset, hot dipped *after* forming for flaw-free finish!
- Large top opening, easy to ice, fill and clean.
- Send for complete information and booklet "Care and Use of Your Cooler." Write Dept. C-26.

QUALITY HEAVY METALWARE Deluxe SCHLUETER MFG. CO. ST. LOUIS, MO.

THE SCHLUETER MFG. CO. • ST. LOUIS 7, MO.

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Put the POWER PUNCH back in your Black & Decker tools

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★ Free Tool Inspection
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Look under "Tools-Electric" in Yellow Pages for address of your nearest FACTORY SERVICE BRANCH. Or write direct for address of nearest branch to:

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B&D Black & Decker® QUALITY ELECTRIC TOOLS

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NO CONCRETE PIT!

Easiest to MOVE!

PORTABLE TRUCK SCALES

Engineered for rugged use in the field. Low initial cost, no maintenance. Can be used as PITLESS SCALE saves on pit costs.

CAPACITIES: 20 to 52 tons. DECK LENGTHS 18 to 43 ft.

OTHER THURMAN SCALES: Pit • Warehouse • Industrial • Liquid Weighing • Wheelbarrow • Batching • Automatic

Precision Scales since 1918

THURMAN SCALE COMPANY

156 N. 5th St. CE-1, Columbus, Ohio

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New York and the HOTEL New Yorker 34th Street at 8th Ave.

just naturally go together

New York's largest and most conveniently located skyscraper hotel. 2500 outside rooms, all with bath and free radio. 100% television available. Meditation Chapel open to all faiths. Direct tunnel connection to Pennsylvania Station. Facilities from 100 to 1,200 for banquets, special functions and private meetings.

THREE POPULAR RESTAURANTS

Lamp Post Corner — Golden Thread Cafe — The Coffee House

Singles from $7 — Doubles from $11 — Suites from $23

JOSEPH MASSAGLIA JR., President — CHARLES W. COLE, Gen. Mgr.

ACROSS THE U.S.A. and in HAWAII

SANTA MONICA, CALIF. Hotel Miramar
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HONOLULU Hotel Waikiki Biltmore
WASHINGTON, D.C. Hotel Raleigh
HARTFORD, CONN. Hotel Bond
CINCINNATI, O. Hotel Sinton
PITTSBURGH, PA. Hotel Sherwyn
DENVER, COLO. Hotel Park Lane
NEW YORK CITY Hotel New Yorker

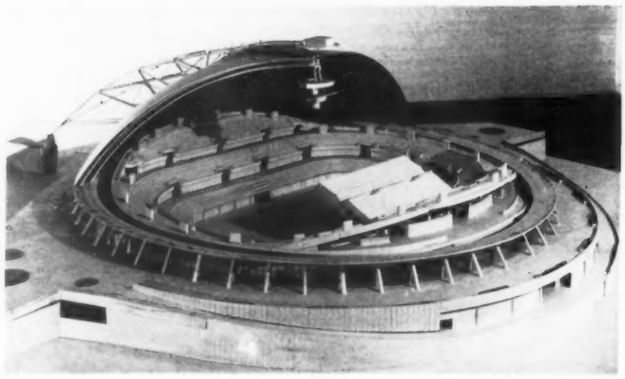
World famed hotels—Teletype service—Television

For more facts, circle No. 363

Retractable steel dome for Pittsburgh arena

The $20 million Pittsburgh Civic Arena, a key structure in that Pennsylvania city's civic redevelopment program, will be covered by a retractable stainless-steel dome. The 415-foot-diameter roof will provide the city with an open-air stadium that can be converted to a weatherproof auditorium at the press of a button.

The roof will be composed of eight sections—six movable and two stationary. The stainless-steel sheathing and mechanical seals will cost an estimated $890,000. When the roof is retracted, the six movable sections—three on each side—will roll over the two fixed sections to open the huge arena.



A model of the $20 million Civic Arena with stainless-steel retractable dome that will be built in the Golden Triangle area of Pittsburgh, Pa. The arena and its mall and parking area will occupy some 20 acres. It will seat between 7,500 and 14,000 people.

A 20 and 22-gage type 302 18-8 stainless steel in a No. 2D special finish has been specified for the skin of the dome. Limbach Co., Pittsburgh, has been awarded the fabrication of the stainless-steel covering, and American Bridge Division, U. S. Steel Corp., Pittsburgh, will supply the $4 million worth of structural steel that forms the dome.

The arena, including mall and parking area, will occupy some 20 acres.

Construction industry bolsters national economy

A survey of construction activity and prospects, conducted among the 125 chapters of the Associated General Contractors, shows that the construction industry is bolstering the national economy and leading the way out of the recession.

The replies indicate that current construction is normal or above normal for this season of the year; construction prospects for the remainder of the year are considered better than normal in a majority of areas, and at least normal in most others. The federal-aid highway program is on schedule or ahead of schedule in most areas; the recession has had little or no effect on construction activity in most instances.

Finally, the recession has leveled off in most areas and lessened in many; and competition among general contractors continues and is greater now than a year ago.

This is the third time since the end of World War II, the AGC said, that the construction industry, by increasing its volume of activity, has provided a bulwark for a faltering national economy and has led the way out of a recession. The previous times were in the recessions of 1949 and 1954.

Bridge engineer honored

Dr. D. B. Steinman, designer of the $100 million Mackinac Bridge in Michigan, received the honorary degree of Doctor of Humane Letters from St. Lawrence University, Canton, N. Y. He is currently designing a bridge over the Bosporus to connect Europe and Asia, and three international bridges joining the United States and Canada.

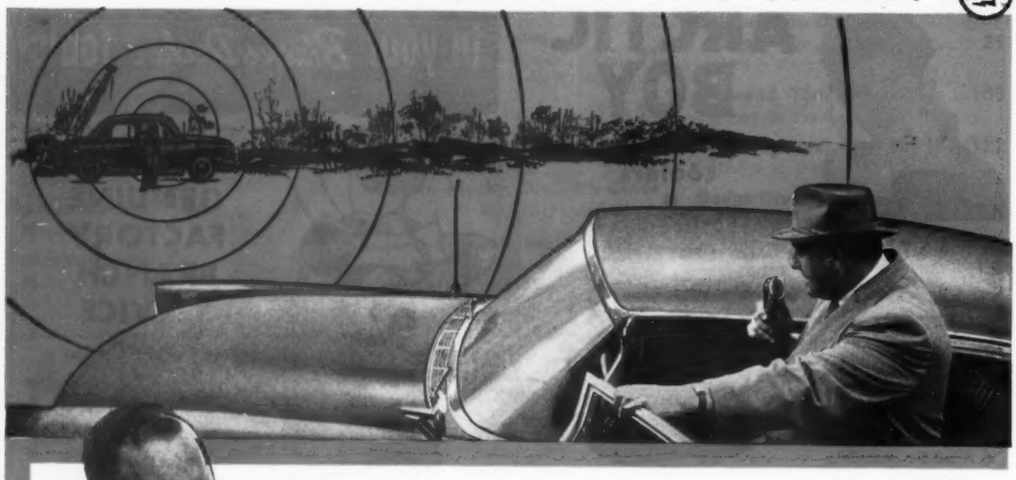
Curtiss-Wright names

The Utica Division of Curtiss-Wright Corp., Utica, Mich., has appointed John C. Hammelef as industrial sales manager for Mercedes-Benz diesel engines. Hammelef directs sales of this line for all industrial applications.

Matt J. Stromberg has been named general parts and service manager of the division. He will direct the parts and service program for these diesel engines, which range from 36 to 3,000 horsepower.

Preliminary engineering worth $7 million was authorized in May for the interstate highway system.

RCA RADIO...FIRST CHOICE OF THE LEADERS



"RCA 2-Way Radio meets our vital need for car-to-car contact in road building!"

Says Mr. James D. Morrissey, Morrissey Inc., Prominent Highway Contractors of Philadelphia, Pa.

The importance of all vehicle operators hearing all messages and being able to talk to one another led the big Morrissey road construction firm in Philadelphia to select RCA Carfone Radio for its trucks and supervisor's cars. Today, the RCA 2-Way Radio system, with two Mobile Relay Repeater stations installed on a high antenna tower, provides excellent car-to-car coverage of the territory served. The assistance of all can thus be enlisted, and individually every man is more efficient. It makes the entire operation much more flexible and assures better control at all times.

The quality of RCA Radio equipment here and in many other successful construction business applications is the reason it is preferred. Look for these outstanding new features: RCA "Quiet Channel" to cut out channel interference; "split channel" readiness; new Minitrol miniature microphone, controls and speaker combination to increase dispatcher efficiency.

It's important for you to know how RCA 2-Way Radio can assure greatest satisfaction, lowest maintenance, actually save you thousands of dollars. And you can find out today without obligation. Just mail the handy coupon.

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PLEASE PRINT

COMPANY _____

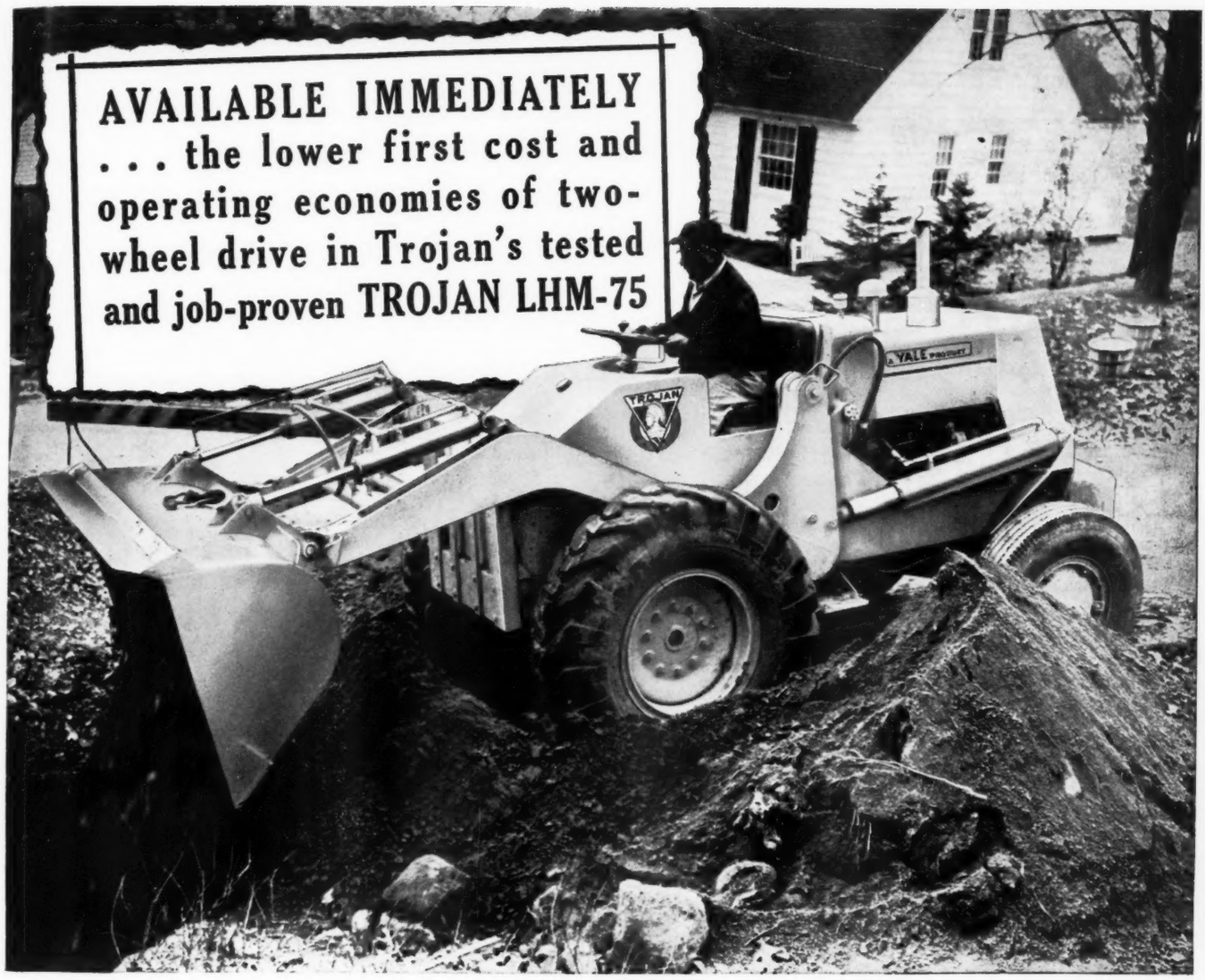
STREET _____ COUNTY _____

CITY _____ ZONE _____ STATE _____

☐ Have RCA Communications specialist make a free RADIO SURVEY of my business.

For more facts, use coupon, or Request Card at page 18 and circle No. 364

AVAILABLE IMMEDIATELY . . . the lower first cost and operating economies of two-wheel drive in Trojan's tested and job-proven TROJAN LHM-75



The LHM-75 is a rugged, fast, economical machine on the jobs where 2-wheel drive is practical.

Low first cost, lower operating costs . . . these are two 'musts' that contractors and public officials can depend on with the Trojan LHM-75 tractor shovel . . . Alone, these two factors are reason enough for the LHM-75 to be on the job . . . It does more jobs faster, at less cost because it incorporates big machine features with the operating economy of two-wheel drive . . . With the 1¼ yard LHM-75, you get the advantages of a big, efficient tractor shovel with a variety of quick-change attachments (back-hoe, crane hook, pallet forks, snow plow, bulldozer blade, enclosed cab) that let you forget about maintaining a yard full of expensive, specialized equipment . . . Contact your local Trojan distributor, he'll be glad to arrange a competitive demonstration — any place, any time — so that you can see outstanding performance and judge for yourself.

TROJAN* TRACTOR SHOVELS

*REG. U. S. PAT. OFF.

YALE & TOWNE 2 & 4 Wheel Drive Front End Loaders

CONTRACTORS MACHINERY DIV. THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 365

Their aim: *to double production without increasing overall loading costs.*
Solution: *a new 4 yard Michigan Tractor Shovel. Its regular time-record:*

60 SECONDS TO LOAD EACH 10 YARD TRUCK

At the Oneglia & Gervasini pit near Woodbury, Connecticut, they are loading trucks in *half the time* it ever took before!

Overall loading *costs*, nevertheless, have stayed practically the same!

Reason for this production-doubling, cost-cutting record is the new 4 yard Model 275A Michigan Tractor Shovel shown. This unit has 1½ *times the bucket capacity* heretofore available in a mobile, rubber-tired Tractor Shovel. Its speed of loading has been remarkable . . .

Heaps small trucks in 20 seconds, 20 yard semi-trailers in 2 minutes

Working mostly with 10 yard trucks in this 1,000-ton-per-day traprock quarry, the Model 275A has established an average load cycle of 60 seconds —*from first pass into a stockpile 'til loaded truck pulls away.* "On our busy days," reports Supt Theodore Tietz, "we move 10-yard trucks out of our pit at the rate of one per minute." Smaller trucks generally require only 20 to 30 seconds (one pass) to load. Twenty to 24 yard semi-trailers usually take 2 to 2½ minutes (four or five passes).

Carries 5 ton load up 35° slope

The 262 hp Michigan has taken over some tough stockpiling chores too. Like moving two-inch stone to the top of a 100 ft high stockpile. The last 60 feet of ramp to piletop here is pitched *at a 35-degree angle*—yet the Michigan regularly carries a heaping 5 *ton load* up it.

Moves 11 ton boulders

Michigan handles "super-lifting" assignments too that smaller Tractor Shovels couldn't touch. Rip-rap, for example. Some of the traprock boulders uncovered in the Oneglia-Gervasini pit weigh 10 or 11 tons! The Michigan makes short work of stockpiling or loading them into trucks. "In fact," says Supt Tietz, "the Michigan frequently has moved rocks our quarry shovel couldn't handle!"

Model 275A easy to maintain

One reason O & G's Michigan performs so well on all these tough jobs is its all-Clark power train . . . Clark torque converter, power-shift transmission and planetary wheel drive axles . . . all matched to each other . . . all designed to the same general specifications as the Clark components which have proved so efficient in the 9,000 smaller Michigan Tractor Shovels sold since their introduction in 1954. "It's an easy machine to service," says Operator Bob Faccin, "and we feel the time is well spent."

If you load trucks, we honestly believe *your* time will be well spent on a study of the big new Michigans. Both the big 4 yard Model 275A, described here, and the bigger 6 yard Model 375A are now proved by over a year in the field. Both are in regular production and readily available. See your local Michigan Distributor for details on performance . . . price . . . and delivery!

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK® EQUIPMENT

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For more facts, use Request Card at page 18 and circle No. 366

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